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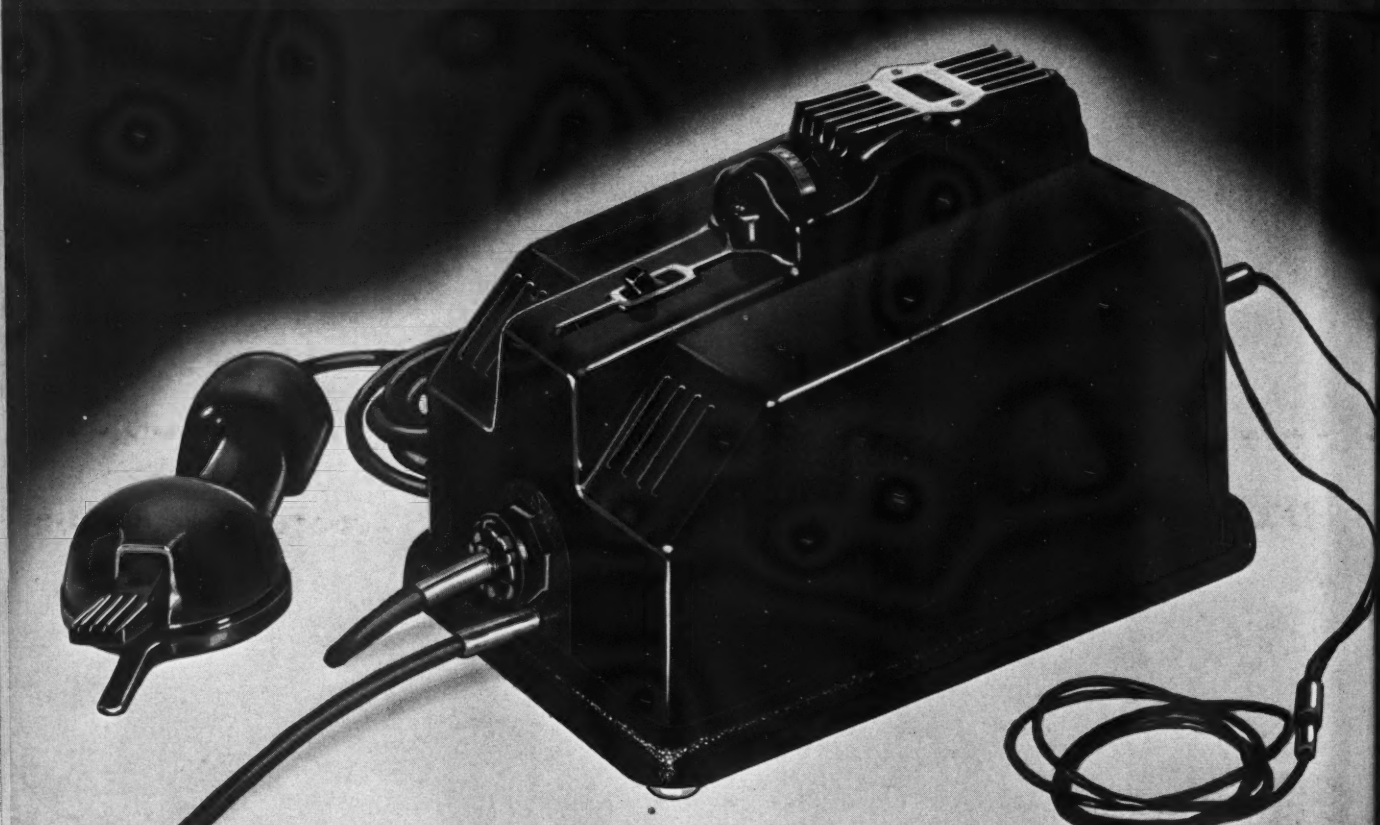

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GENERAL ELECTRIC X-RAY CORPORATION

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Electric Soldering Technique

BERT L. COLE, D.D.S., St. Paul

ELECTRIC SOLDERING IN dentistry is comparatively new. The principles, however, are the same as when a blowpipe is used. The joints must be clean and the parts to be united must be fastened to the model, so that there will not be any shifting or moving during the operation of soldering. This is important. The best way to fasten the parts is to put a drop or two of medium thin plaster at points as far removed from the joints to be soldered as possible. When the soldering is finished, then, this plaster will come free from the model and the model will still be in good condition.

Flux

Plenty of the right kind of flux should be used in electric soldering and the heat must be applied in a manner that heats both pieces of metal to be soldered as evenly as possible. If this is done, electric soldering is as simple as blowpipe soldering, once the dentist acquires the necessary "knack" for the work, which comes with practice. My experience has been that the best results are obtained with Torit flux, number 4, which is potassium fluoride mixed in a vaseline base with just enough vaseline in it to keep the moisture away from the potassium fluoride until it is actually used in soldering. As this flux does not deteriorate with age, there is full strength in the chemicals when the flux is used during soldering. It is important that both the carbon and brass electrodes be kept clean. They should be sandpapered occasionally.

Degrees of Red Heat

In soldering chromium alloy, the first visible red is about 900° F.; dull red is about 1,200° F.; cherry red is about 1,400° F.; and bright cherry red is about 1,600° F. Chromium alloy metal can be heated to about 1,800° F. without taking the temper out of it.

Metals Used in Electric Soldering

The metals used largely for electric soldering are gold and platinum, chromium alloy in its many different combinations, and bands and arch bars made of various alloys used in orthodontia. Gold or clasp metal wire is the easiest to solder because there is no danger of taking the temper out of it and it does not oxidize as fast while soldering as do the other metals. In chromium alloy soldering, care must be taken not to overheat the metal as once the "life" or "elasticity" is burned out, it cannot be restored.

The solder to be used in my technique is 18 K. yellow gold solder for all joints that are exposed to the fluids of the mouth or parts that have much strain on them. For joints that are to be covered by rubber or other denture material a good grade of silver solder is sufficient. Of the silver solders I have used, the best success has been achieved with Torit silver solder, number 18, which is made up in strips about the width of gold solder and about four times as thick. It is more convenient to use with the electric spot-soldering outfit in that form.

There are several so-called chromium alloy solders on the market, but on analyzing them, it is found that they are usually silver solder with about 20 per cent cadmium added, to lower the fusing point. My experience has been that the cadmium makes the solder sluggish and brittle.

Strength Test of Soldered Joints

If at any time there is any doubt as to the strength of the soldered joints to be made with the electric spot-soldering outfit, a test joint should be made of two pieces of metal. The operator takes hold of each side of this joint with a good heavy pair of pliers, and twists and bends the joint until it breaks. This is one of the easiest ways to see how much strength there is in the soldered joints. It is a great deal better if the joint is weak to know it by this testing experiment than to have the joints fail in a finished case.

Generation of Heat

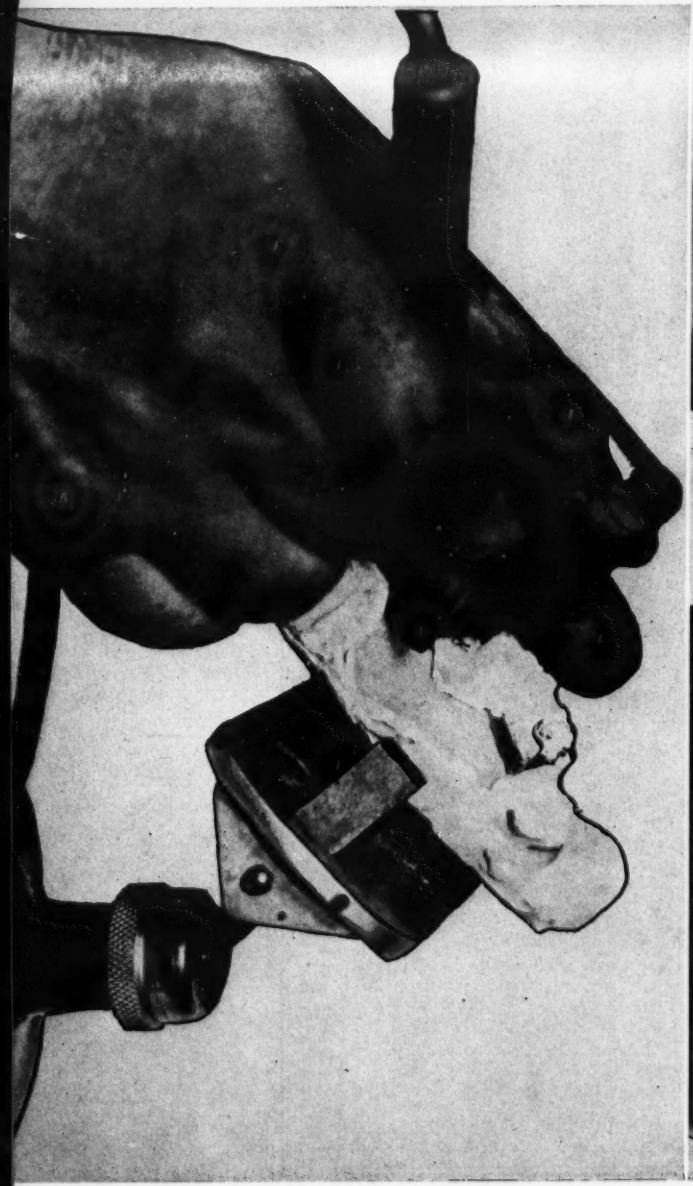
In the electric spot-soldering outfit the heat is generated by passing a heavy current through a resistance, the current being produced by a heavy duty transformer. The duty of the transformer is to reduce the voltage to a small value and to raise the current to a high value, such as is necessary to produce the extreme heat needed to melt the solder. The circuit is made up of copper and brass throughout, with the exception of the carbon electrode. This electrode offers considerable resistance at the point owing to the copper coating on the carbon being ground away.

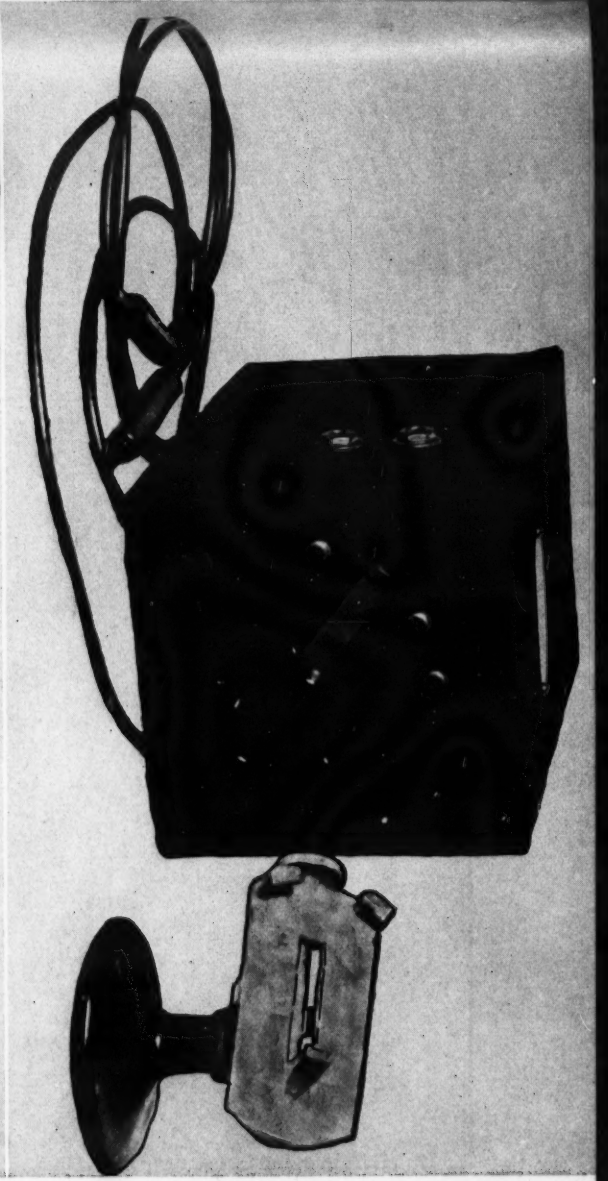
When the circuit is closed, by putting the switch at the "on" position, the heat is produced at the point of the carbon and conducts itself to the solder and the work through the simple laws of conductivity. Then the rheostat is set at either 1, 2, 3 or 4, depending on the heat required. The number 1 position gives 2,000° F.; number 2 gives 3,000° F.; number 3 gives 4,000° F.; and number 4 gives 5,300° F. The amount of heat required is governed by the size of the metals being soldered. Then the brass terminal (or electrode) is placed in the proper position and the solder is touched with the carbon point. This completes the circuit. The longer contact is made with the work, the farther the heat travels and the more intense the heat becomes.

After a little experience it will be learned that heat is generated between the two contacts, or terminals. One terminal is made of brass and the other of carbon. These terminals are arranged so as to heat the two pieces of metal to be joined at the same time as all metal between the two ter-

Fig. 1 (top)—Soldering machine with model holder. The switch on the rheostat, which controls the heat, is illustrated. The switch is set at number 2 position.

Figs. 2 and 3 (center and bottom)—Model mounted on the model holder with clasps and bar held in position with soft plaster. Position of the carbon and brass electrodes in an actual soldering operation.





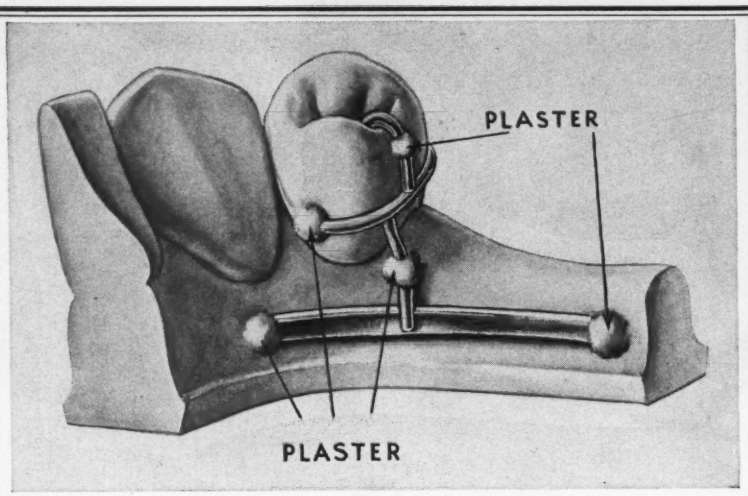


Fig. 4

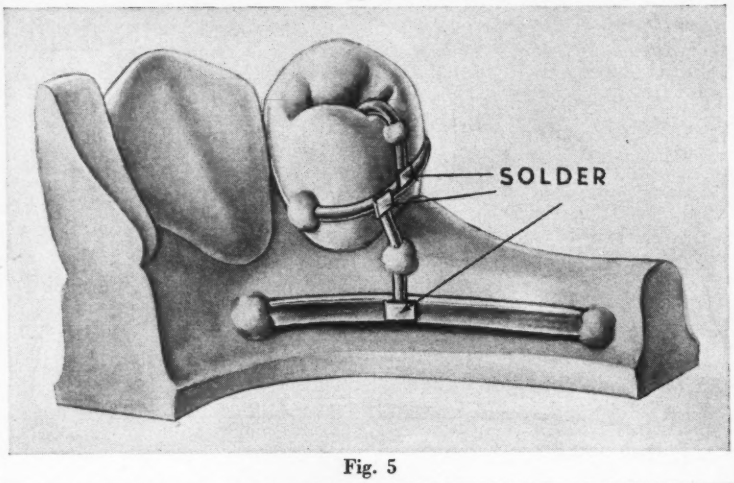


Fig. 5

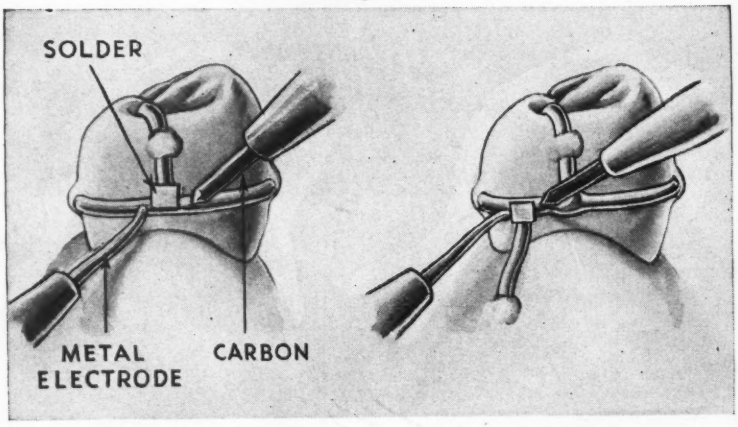


Fig. 6 Fig. 7

Fig. 4—Lingual bar, clasp, rest, and tang held in position with plaster.
Fig. 5—Beginning of all soldering operations; namely, putting solder and flux at joint. Place brass electrode as close to solder as convenient to work. Touching the solder with the carbon electrode and letting it become hot enough to stick the solder in position.
Fig. 6—Soldering rest lug on molar clasp after fastening solder as shown in Fig. 5.
Fig. 7—Soldering tang to clasp after fastening solder as in Fig. 5.

minals becomes hot. The closer the terminals can be kept together in soldering the less metal will be heated. It should be remembered that solder travels to the hottest point, or part, of the metal. As stated before, the same principles apply in electric soldering as in using the blowpipe. If the solder balls up and refuses to flow, it is because the metals one is trying to join are not hot enough. Above all things, the solder should never be melted without having the metal to be united a little hotter than the solder.

It is more difficult to solder a large piece of metal to a smaller piece and, as the heavy piece takes more heat than the smaller one, it is best to arrange the brass and carbon terminals so that the heavy bar is heated first. Then, just as the solder flows, the small bar is touched a fraction of a second with the carbon point. In that way the two parts are equally hot and the solder will unite the two parts.

Use of Backing Material

In soldering two pieces of metal together it is often a good plan to slip a thin piece of copper backing material (or gold backing material) underneath the joint, letting it extend out at the edge far enough to make a place on which to put the brass terminal and use as a return for the current from the soldered joint. It also aids in establishing the electric circuit between the terminals.

Premature Oxidizing

In case a joint oxidizes before the joint is completed, it is well to have handy a solution of 45 per cent hydrochloric acid, 5 per cent nitric acid and 50 per cent water in a bottle with an eye dropper. A little of this acid may be put on the joint, allowed to stand a minute or so, and brushed with a stiff-bristled brush. This will clean the joint, and the operator will be ready to start soldering again.

Advantages

The following are some of the advantages of electric soldering:

1. The operator can work directly on the model on which the work is assembled. It is not necessary to wait for the plaster to be dry. This method, therefore, is time-saving.

2. It is possible to repair broken bars and clasps on partials without

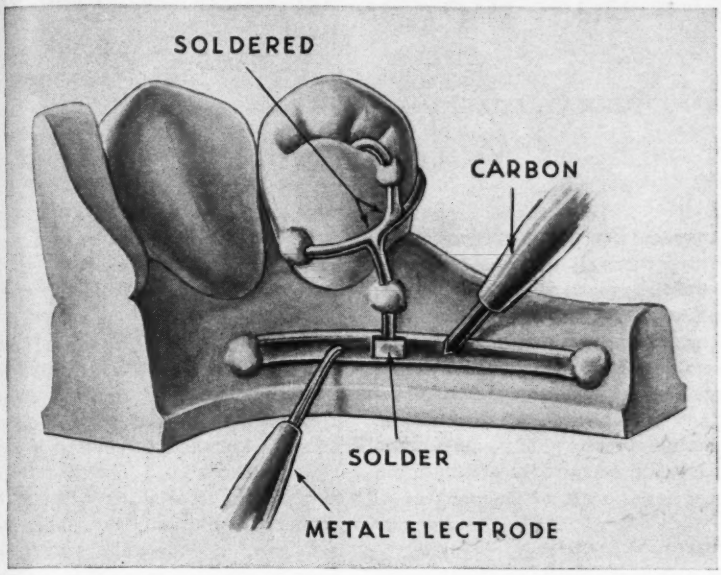


Fig. 8—Position of carbon and brass terminals so as to fasten tang to lingual bar after having fastened solder as in Fig. 5.

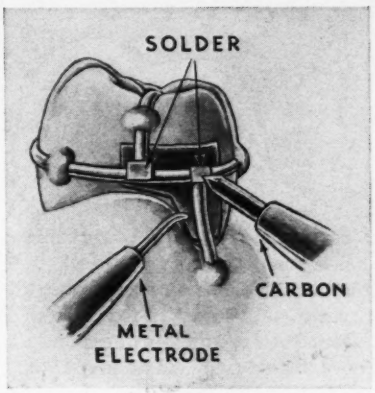


Fig. 9—A piece of thin copper backing material slipped under joint of rest, lug, and clasp with enough backing material exposed to make a place to put the brass electrode to use as a return for the electrical current; also to help keep the electrical connection between the two pieces and make soldering easier. This may be used in any of the other types of soldering requirements.

taking off the vulcanite or other material holding the teeth.

3. Small appliances, such as orthodontic appliances, can be soldered together by using wet asbestos as a means of holding the parts together. The operator can proceed to solder without preheating or drying.

4. Contact points can be soldered on inlays without the danger of injuring the margins by overheating.

1085 *Grand Avenue.*

ANNOUNCEMENT OF BOOKS RECEIVED

FEEDING OUR CHILDREN, By Frank Howard Richardson, M.D., New York, Thomas Y. Crowell Company, 1937. *"A Simple and Understandable Exposition of the Principles of Nutrition, together with their Practical Application to the Task of Planning Meals for the Various Ages."*

TOOTHFUL ESSAYS, by Edward Samson, L.D.S., R.C.S. Eng., with the author's Original Illustrations. Foreword by Sir Norman Bennett. London, John Bale, Sons & Danielsson, Ltd., 1936.

PROSTHETIC DENTISTRY, By Norman S. Essig, D.D.S., Brooklyn, New York, Dental Items of Interest Publishing Company, Inc., 1937.

HISTORY OF THE HUMAN TEETH, *An Introduction to Comparative Dental Anatomy,* By Cleveland Sylvester Simkins, Ph.D., Philadelphia, P. Blakiston's Son & Co., Inc., 1937.

I DENTI E LA SALUTE, By Angelo Chiavaro, Milan, A. Mondadori, 1937.

Saving and Making Pulpless Teeth Safe

BEN A. MURRAY, D.D.S., Denver

THE NECESSITY OF having a workable and safe root canal technique which will be applicable to all cases requiring root canal therapy must now be apparent to the dental profession.

There is a growing knowledge that many teeth with degenerating pulps are retained by patients to whom such infected though vital teeth are a greater menace than a frankly pulpless tooth. It may also be true that a root-filled tooth has been unskillfully treated and yet not be so great a hazard as a tooth with an infected pulp. The question, then, is whether to treat and fill the root canals of the teeth with unhealthy pulps or to extract the teeth. The extracted tooth can never again serve as a masticating organ or as an esthetic aid. No type of replacement meets these essentials as well as the natural teeth. It is my belief that a tooth can be made safe by root canal therapy and filling.

Pulp Removal

Arsenic As a Pulp Destroyer—The use of arsenic trioxide as a pulp devitalizing agent was introduced by Spooner of Montreal about the year 1836. The effect of this chemical on the pulp and periodontium has probably had more to do with bringing pulpless teeth into disrepute than any other agent or condition. With arsenic the devitalization of the pulp is brought about by the effect of the arsenic on the walls of the small blood vessels contained therein, occluding them at the constricted cemento-dental junction and causing devitalization of the pulp by strangulation. Traces of the arsenic may pass into the periapical tissues and there cause irreparable harm. Moreover there is always the danger that the arsenic might leak out of the cavity and cause necrosis of the soft and bony tissues surrounding the tooth. With the frequent severe cases of pulpitis following the application of arsenic and the too frequent loss of the tooth because of arsenical necrosis of the surrounding structures, it may be said that the pulpless tooth will take its place as a useful and safe organ only when the use of arsenic is discontinued.

Nerve Blocking Method—With the nerve blocking technique of the present day and the safe use of procaine, the painless removal of pulps is made so easy and certain that there is no excuse for the use of arsenic.

Surgical Asepsis

As a prerequisite to successful root canal treatment one must have a concept of surgical asepsis, on which the success of root canal therapy greatly depends.

1. The tooth is isolated with a rubber dam.

2. The tooth and the exposed surface of the rubber dam should be scrubbed with a 5 per cent tincture of iodine.

3. All instruments should be freshly sterilized by autoclave or boiling or should be kept immersed in a penetrating, quick-acting, nonrusting, fluid germicide.

4. The operator should wear sterile rubber gloves and touch nothing but sterile instruments and dressings during the treatment.

5. Cotton, paper points, gauze, towels, and napkins should be autoclaved.

6. Diagnostic wires or silver points may be flamed.

7. In removing the contents of a pulp canal care should be exercised to sterilize the canal beyond the instrument being used to remove the contents.

Types of Cases

To simplify the description of the technique, I will arbitrarily divide the different types of cases into three classes which will cover the majority of problems of root canal therapy and surgery with which we have to deal. The basic principles used in the cases herein described may readily be modified and adapted to cases that may vary somewhat from the examples cited.

Class 1—A patient, aged 18, has a pulp exposure in a lower first molar.

Roentgenographic Examination: Roentgenograms are made to ascertain whether the tooth can be treated.

Nerve Block and Asepsis: If the tooth can be treated the inferior dental nerve is blocked, the rubber dam is placed, and the field is sterilized. From this point, surgical cleanliness is exercised until the canals are filled and the pulp chamber is sealed.

Treatment: 1. (First Sitting): Direct access to the pulp chamber and canals must be gained by cutting away enough tooth substance. In the case of a root that curves to the distal, this may mean cutting away the mesio-axial wall of the crown down to a point near the gingiva to enable one to follow the curve of the root. When ready access is provided for, the bulbar portion of the pulp is removed, thus leaving in sight the orifices of all canals.

2. (First Sitting Continued): a. A small smooth broach, sometimes called a pathfinder, should be carried to a point in the canal where the finger touch indicates the location of the dento-cemental junction, and no farther.

b. This smooth broach is followed by the smallest barbed broach, preferably of the type with short-mounted aluminum handle, 1¼ inches in length over-all. Removal of the main body of the pulp from the canal on the first attempt is ideal. This routine is followed until each canal is fairly free of pulp tissue.

c. This type of operation will usually result in considerable hemorrhage, especially from the distal canal. All hemorrhage must be controlled during this sitting.

d. After the pulp tissue is removed, the canals are reamed out and shaped

Fig. 1 Types of teeth made safe by root-canal therapy.

for the filling point. This is done with files, and spiral and barbed broaches.

e. Excess moisture is now removed.

f. Finally sterile paper points, which have had the fine end charred over a flame and the loose carbon removed before being placed in the canal, are carried to the root-end.

g. The pulp chamber is then sealed with oxychloride of zinc.[1]

The object of placing the paper points in the canals is to take up by capillary force all seepage of serum and tissue juices that may have been walled in beyond root-ends. This will control engorgement and pressure that would otherwise produce pericementitis.

3. (Second Sitting): a. The paper points which were placed in the canal at the previous sitting are removed and dropped into dextrose brain broth and cultured for at least twenty-four hours.

b. During this sitting pure silver points are filed to conform in shape and size to the already prepared canals and are placed in the canals with the points as near as possible to the dento-cemental junction.

c. Roentgenograms are then taken of the tooth to show the position of these silver wires.

d. If the roentgenogram shows the points to be in their desired position the points are removed, and a medicated dressing, with all excess medicament removed, is packed tightly within the canal until the canals are filled to the floor of the pulp chamber.

e. The pulp chamber is again sealed, and this dressing is allowed to remain for twenty-four hours.

4. (Third Sitting): a. The dressing is removed, canals are dehydrated clear to the root apexes with alcohol and blasts of hot air.

---

[1]Oxychloride of zinc cement is the only zinc cement that is impenetrable to bacteria. To prove the penetrability or porosity of oxyphosphate of zinc cements, I have made cubes of this cement, 12 mm. in size. These when set were put in aniline dyes. The dyes penetrated the cement. Similar cubes of oxychloride of zinc cement were not penetrated by any of the dyes used in the first experiment.

The molecule of the aniline dyes is smaller than that of saliva, smaller than the smallest pathogenic organisms, but saliva or pathogenic organisms might penetrate oxyphosphate of zinc cement but they could not penetrate oxychloride of zinc cement if impenetrable to the analine dyes.

Copper cement is also satisfactory as to impenetrability but it is difficult to remove if used for a treatment seal and its color is objectionable if used for a permanent seal.

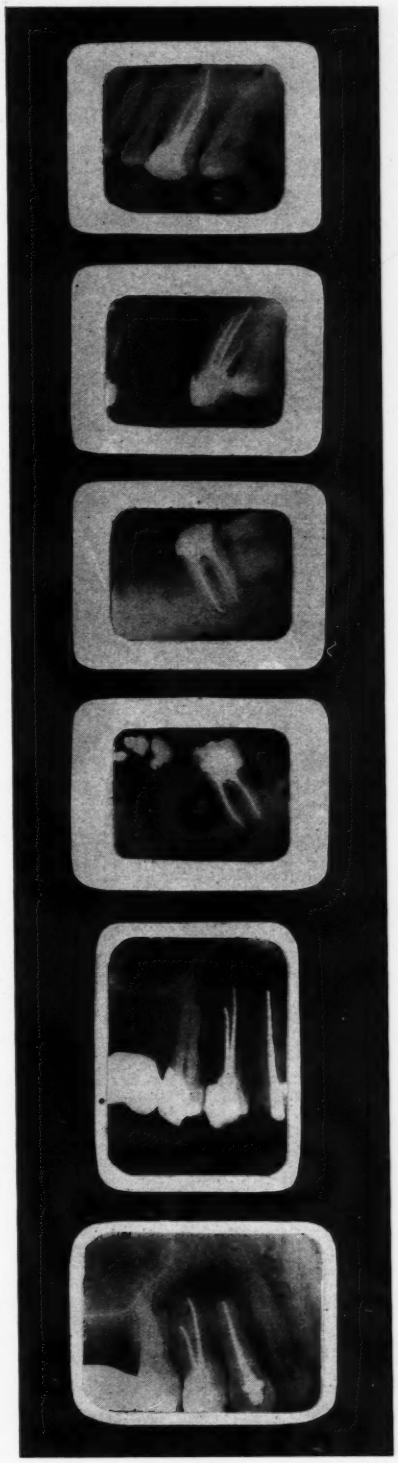


Fig. 2 Types of teeth made safe by root-canal therapy.

b. Three coats of varnish should then be applied to the canal walls with a lapse of five minutes between coats. Every effort should be made to get the varnish to the dento-cemental junction.

c. The tooth is now ready for the canal filling. The glass slab must be sterile and the cement spatula flamed preparatory to the mixing of plastic material[2] to be carried into the canals and thoroughly puddled to place throughout the length of the canal. The mix should be comparatively thin for the puddling process, after which powder is added to make the consistency of the cement thick enough to cling to the silver points[3] that are about to be placed in the canals.

d. One point is now thoroughly covered with cement and introduced into its canal and carried to the dento-cemental junction as indicated in the previously taken roentgenogram.

e. The operation is repeated for each canal.

f. A final roentgenogram is now made.

g. If the silver canal points are in their proper position, the tooth is ready for the oxychloride of zinc cement to be placed over the pulpal wall.

h. When this is done the tooth is ready for its restoration.

Class 2—A single-rooted tooth, putrescent or with an acute alveolar abscess without a fistula is the Class 2 type.

Treatment: 1. The canal is opened for drainage. If pus flows from the canal, it is allowed to remain open until pus is no longer in evidence. This may be a period of several days. If it is an upper anterior tooth, it may be advisable to drain through the labial alveolar plate at the most dependent point of the pus sac.

2. If an opening is made through the labial alveolar plate a warm saline solution should be forced through the canal and out by way of the artificial fistula.

3. If the canal can be made dry, a dressing is sealed in at the first sitting. The dressing may be changed daily for three or more days.

4. Then one should begin sterilization of the periapical bone by ionization, using Lugol's solution as the medicament.

5. Repeat ionization not less than four days apart until at least one negative culture is obtained. The time period for culturing is from forty-eight to seventy-two hours.

6. If the root is denuded of pericementum at the apex, root resection will be necessary.

7. The root canal should be filled before root resection, provided the canal can be made dry at the root apex. If it cannot, it will be treated as in Class 3.

8. The canal filling is done in the same manner as in the Class 1 type of case, except that the silver point is carried only as far as the root is to be resected.

Class 3—There is an occasional single-rooted tooth in the maxilla which defies all ordinary attempts to sterilize the apical third, and to free it from moisture.

Treatment: 1. The canal should be reamed out sufficiently to enable the operator to work rapidly and accurately.

2. An opening is now made through the labial plate of alveolus opposite the root apex, preparatory for a root resection.

3. All diseased bone and root are cut away to healthy cementum and bone.

4. The opening is packed until there is no longer any seepage of blood into the canal.

5. The rubber dam is now placed and the canal is mechanically cleansed and dehydrated.

6. Howe's silver nitrate solution is introduced into the root canal and a small amount is forced through the apex so that it will cover the freshly cut dentine and cementum of the root-end.

7. Allow the silver solution to remain in place for at least ten minutes; then precipitate the excess with eugenol. Three minutes' time is sufficient for precipitation.

8. Dehydrate and fill the canal as in Class 2.

Comment

The best results are obtained in this manner. New bone fills in rapidly beyond the resected root. Bacteriologic tests in these cases made by trephining through the labial alveolar plate two years after treatment have all been bacteria-negative. It is possible to use this technique in one sitting, with a remarkable degree of success in the case of an old chronic abscess, with or without a fistula.

1132 *Republic Building.*

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[2]The plastic material I use to seal canals in posterior teeth is made according to the formula of Doctor U. G. Rickert of Ann Arbor, Michigan. It does not change in volume and is easily manipulated. It is sold under the trade name of Kerr's sealer. I have not always been able to control discoloration of anterior teeth when this material was used; hence, the necessity for something that will not discolor these teeth. I therefore use a Neo-Dent Product, manufactured by A. A. Brown Dental Manufacturing Company, St. Louis, Missouri; formula by Doctor E. P. Brady. It is a neutral product and works well. The volume change is negligible.

Gutta-percha points, sterilized in iodine, may be used in anterior teeth instead of silver points in cases in which a dowel crown is later to be placed. The gutta-percha points must not be heated and packed, as heating is followed by marked shrinkage and change of volume, which eventually will allow passage of bacteria.

[3]It is not because of the alleged germicidal value of silver that I use silver wire in root canals. In fact, my clinical experience would tend to prove that silver does not have germicidal value. Silver, however, is nonirritating to bone and soft tissue and makes an excellent root-canal filling core; therefore, I have adopted its use.

I have been using pure silver wire for the core of canal fillings for the last twelve years. The wire is filed to approximately the shape and size of the canal file or reamer last used in finishing the walls of the canal. The wire is rigid enough for even a fine point to be carried to the dento-cemental junction; yet it is pliable enough readily to follow the canal of a curved root. It does not change in shape or volume, nor does it discolor the tooth. It shows so clearly in the roentgenogram that the relation of its point to the root-end is unmistakable.

Arranging Artificial Teeth to Eliminate Denture Errors

W. A. COLBURN, D. D. S. and C. P. REMY, San Francisco

AN INCORRECT VERTICAL dimension is usually the indirect cause of failures in denture construction. It is obvious, therefore, that a control of this dimension will also correct an overbite, overjet, or esthetic or mechanical error. The proper approach to so important a step should be from the standpoint of mechanics and not of sculpture.

The addition of the accurate plane of the artificial mandibular teeth to the established and accepted plane of occlusion changes the conventional technique of tooth arrangement of an upper and lower to an upper that will function with a favorable artificially created lower. The phrase "plane of the mandibular teeth" means the curves or paths that the completed arrangement of the lower artificial teeth will take when set to the plane of occlusion and the proper ridge relations of the mandible (Fig. 6).

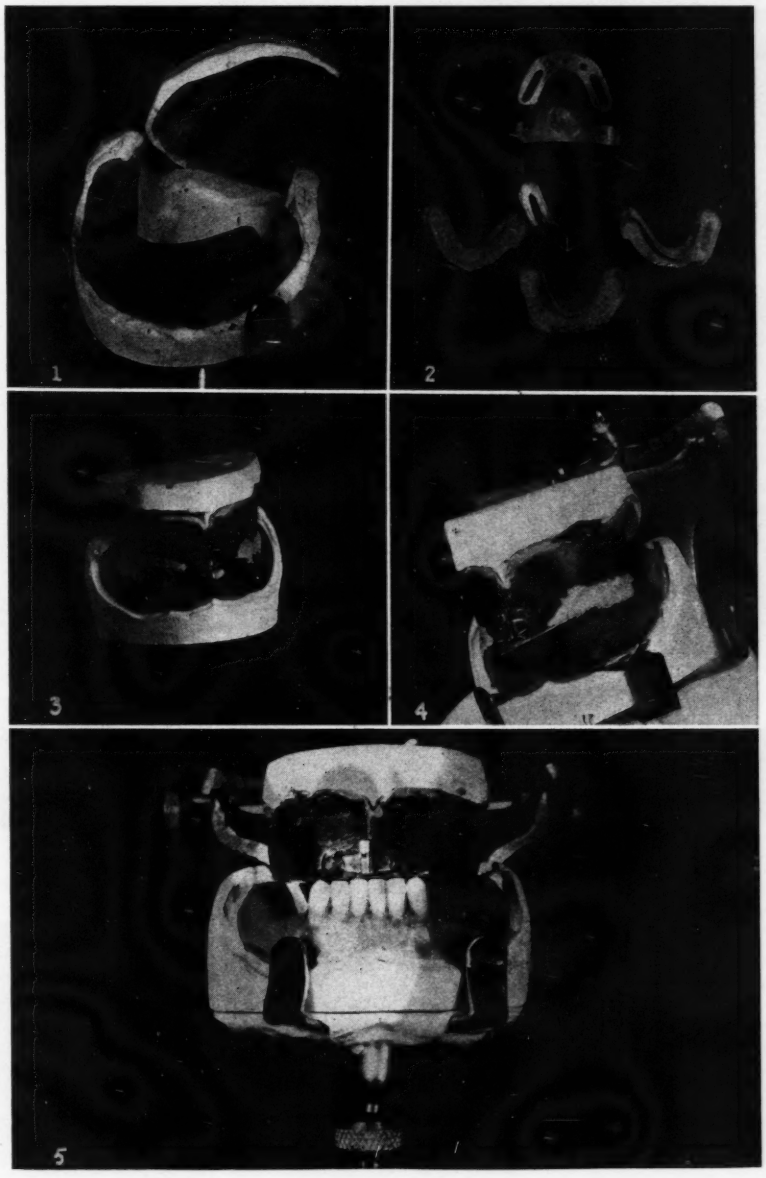


Fig. 1—Baseplates and bite-blocks fitted to the casts.

Base-Plate Material: Base-plate material should be adapted to the cast with sufficient accuracy to prevent rocking, and reinforced with an excess of material to support the bite-block without distortion. Undercuts and large tuberosities may be eliminated to facilitate inserting and removing from the mouth during the bite-taking.

Bite-Block: Modeling compound is shaped and securely attached to the baseplate. The compound should be about 15 mm. high and from 10 to 12 mm. wide for the average case.

Fig. 2—Bite-block with brass plates, gothic tracing, and inter-oral checks.

Plane of Occlusion: The plane of occlusion is located by paralleling the occlusal plane of the maxillary bite-block with a line drawn on the face from the upper border of the external auditory meatus of the ear to the ala of the nose. The perpendicular length should be at least 1 mm. below the upper lip at rest, and the horizontal plane, parallel with the pupils of the eyes. A perforated brass plate is then attached to the occlusal surface of the bite-block to prevent distortion and facilitate locking the bite-blocks in centric.

Plane of the Mandibular Anterior Teeth: The plane of the mandibular anterior teeth and approximate equalized centric is accomplished by heating the mandibular bite-block and having the patient bite the softened mass against the maxillary bite-block in centric occlusion, at least three times, until the height of the block is level with the lower lip. A brass plate with an extension for the incisal tracing is then attached to the compound bite-block.

Fig. 3—Bite-blocks locked in equalized centric position.

Fig. 4—Casts attached to articulator showing the maxillary bite-block with the incisal path-marker and median line; the mandibular bite-block with an extension plate, and the check-bite equalizing material between the two blocks.

Fig. 5—Plane of the mandibular anterior teeth. Beginning with the central incisor, right or left, the six anterior mandibular teeth are set so that their long axes are parallel to the center line located on the maxillary bite-block, their necks are over the ridge and their incisal edges are in contact with the maxillary bite-block.

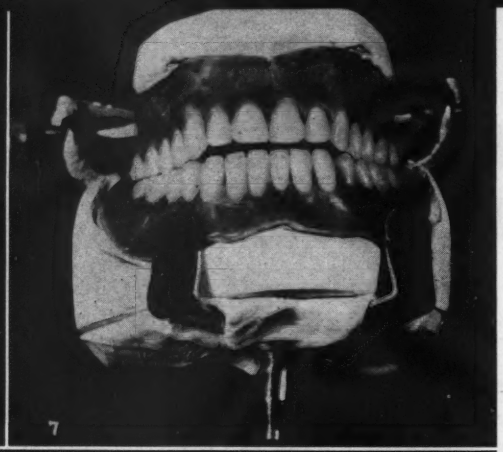
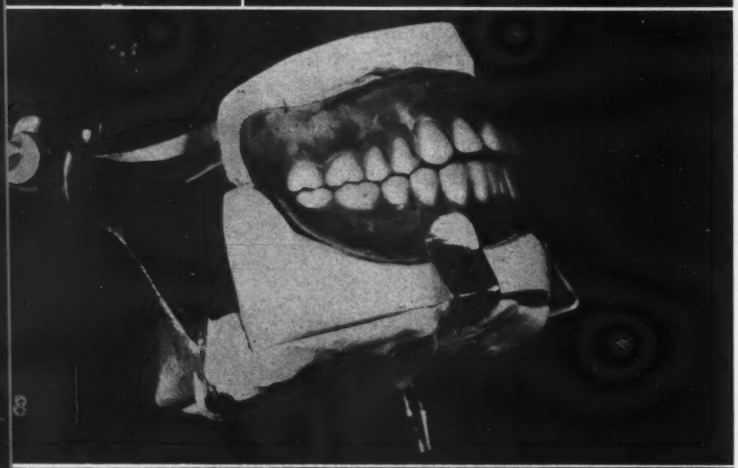
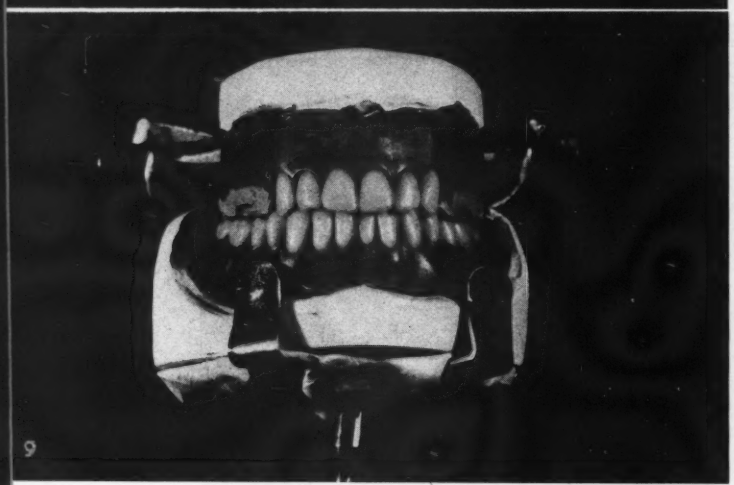


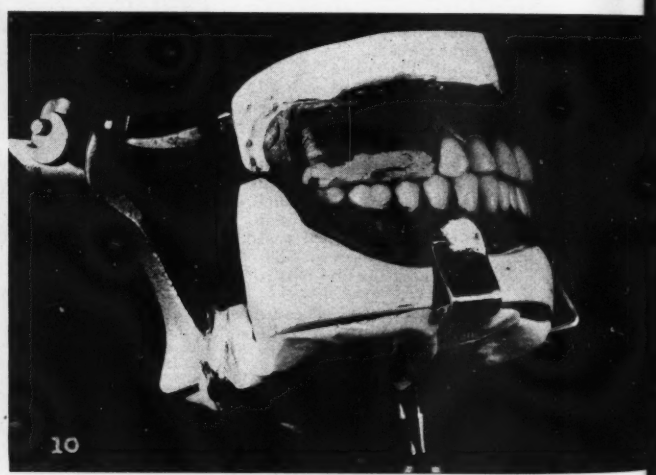
Fig. 6—Plane of the mandibular posterior teeth. The mandibular first bicuspids are set so that their buccal cusps touch the maxillary bite-block and their long axes tip slightly lingually; the second bicuspids are set so that their buccal cusps are 1 mm. from the maxillary plane and the lingual cusps, 1.5 mm.; the first molars are arranged so that the mesio-buccal cusps are 1.5 mm. from the maxillary bite-block; the disto-buccal cusps, 1 mm.; the mesio-lingual cusps, 2 mm.; and the disto-lingual cusps should clear the plane by 1.5 mm. The second mandibular molars should continue the curve established by the first molars and also the curve of the mandible. This arrangement produces a curve of Spee simulating the Gysi average for the 33 degree teeth, and should be modified slightly for the 20 degree Trubyte posteriors.



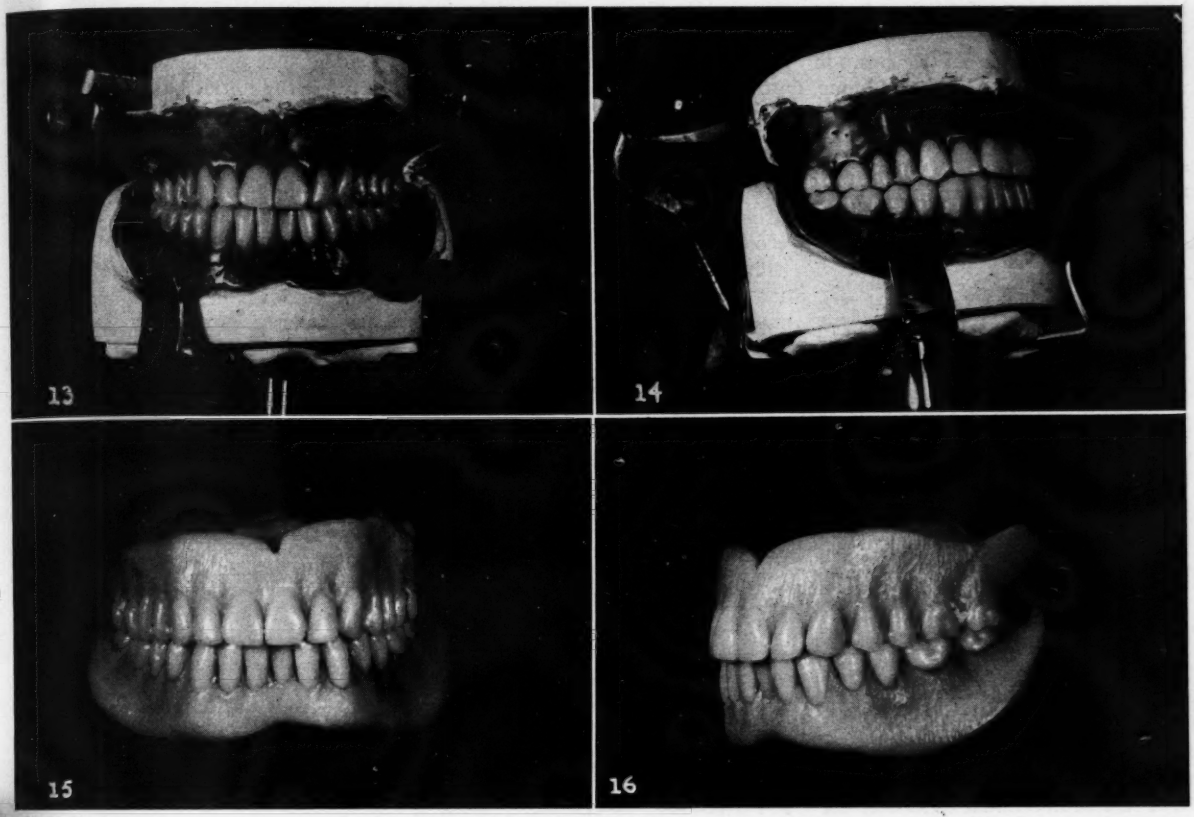
Figs. 7 and 8—Vertical dimension opened. Beginning with the right or left first molar, the maxillary bicuspids and molars are arranged to the mandibular posterior teeth. The anterior maxillary teeth are then set, completing the case, but showing an excessive overbite because of the opened or incorrect vertical dimension.



Figs. 9 and 10—Vertical dimension closed. Remove the maxillary bicuspids and molars; reform compound bite-blocks; heat compound, and return to the mouth. The patient closes into the reheated compound two or three times, or until the vertical dimension is correct for the overbite, overjet, and esthetics. Trim compound and place check-bite material on bite-block and return to mouth for equalizing; remove cast from upper bow of articulator and remount.



Figs. 11 and 12—Re-equalized centric. When the mandible is repositioned, opened or closed, in the mouth, the centric relation should be re-equalized with the check-bite material (Fig. 11), and the maxillary cast re-attached to the upper bow of the articulator without changing the set-up of the mandibular case (Fig. 12).



Figs. 13 and 14—Vertical dimension corrected. Remove the compound bite-blocks from the maxillary baseplate and reset the posterior teeth to the mandibular arrangement. No change is necessary in the mechanics of the mandibular bicuspids and molars, but the six mandibular anterior teeth may be raised or lowered from the mandibular plane about 1 mm. to improve the overbite, overjet, or esthetics.

Figs. 15 and 16—Completed denture.

Complicated techniques of registering these curves or paths for anatomic reconstruction and articulator adjustment are not within the scope of this article nor indicated for plain-line articulators, but should be considered as additional refinement without changing the basic principles advocated in this technique. Changing the technique from an upper and lower arrangement to the technique of an upper will also remove the mystery and attending errors of the former, and eliminate make-overs of mandibular dentures.

Steps of a simplified bite-taking system are illustrated and described in the legends to the illustrations to clarify the control of the vertical dimension, not by juggling the artificial teeth, but by arranging the teeth to the proper ridge relations and making the necessary vertical corrections in the mouth, and back to the instrument for remounting. The bite-taking system also permits elaboration for anatomic balance. This system of teeth arrangement is essentially the same for the more simplified, but only occasionally used, "mushbite."

Vertical Dimension

Vertical dimension of that space formerly occupied by the natural teeth may be so different for an artificial substitute that the combined height of the maxillary and mandibular bite-blocks should be considered *incorrect;* therefore, the height of the mandibular anterior teeth at the lip level is taken as the correct height for the mandibular case, and the maxillary height is changed if it is found necessary to alter the overbite, overjet, or the esthetics.

Rest Position—The vertical dimension in rest position is that position assumed by the mandible when the lips are touching, the mandible is at rest, and the bite-blocks are in contact without pressure. This relaxed position of the mandible may be accepted as the correctable vertical dimension.

Working Position—The vertical dimension in working position is a position that should be from 3 to 5 mm. shorter than the rest position, and is located by the use of the sibilants in words such as Mississippi. The maxillary bite-block is heated and then shortened by biting pressure against the mandibular bite-block until the blocks are about 3 mm. shorter than the accepted rest position. This closed position should be accepted as the more nearly correct vertical dimension, but may be changed and tested after the teeth are arranged for the try-in.

Centric Position

Centric—Centric, or that position generally accepted as the retruded or

habitual working position of the mandible, may be constant or variable. If constant the centric position may be obtained by any technique, but if variable, it is advisable to use an incisal path marker (Gysi). This simple device, when attached to the maxillary bite-block and brought in contact with the blackened surface of the extension plate on the mandibular bite-block, will register the right, left, and protrusive paths of the mandible in function. The apex of this design, the gothic tracing, should be accepted as centric position (Fig. 2).

Equalized Centric—The baseplates are refitted on the casts. Shallow grooves are cut in the maxillary bite-block, and deep grooves in the mandibular bite-block. The check-bite material[1] is mixed to a rather stiff mass, and a small amount of the mix is placed on each side of the mandibular bite-block. The patient is instructed to close and hold the bite-blocks in contact under slight pressure while the dentist notes whether the incisal path-marker pin is directly over the apex of the gothic tracing. The bite-blocks are removed after the material has set. The casts are now fitted in their base plates and are ready to be attached to an articulator (Fig. 3).

This final equalizing of centric is based on the assumption that the heating and closing of the bite-blocks from the rest position to the working position is inaccurate and therefore needs a final adjustment. This simple step, not only equalizes centric, but accurately locks the maxillary and mandibular bite-blocks in centric relationship.

450 *Sutter Street.*

[1]Check-bite compound is a material that retains its shape and strength after setting in the presence of moisture and is used for inter-oral checks (protrusive, right and left laterals), equalized centric, and to lock the bite-blocks in centric. Check-bite materials are on the market under the trade names of Line-A-Dent, Co-Oral-Ite, Wondrpak, and others.

DIET AND DENTAL CARIES

(Report from the Literature)

[A.A. Tennent, M.B., CH.B.: A Dietetic Factor in Dental Decay, The New Zealand Dental Journal, 33:12 (January) 1937.]

SEVERAL YEARS AGO an attempt was made to determine the cause of the high rate of dental caries among the school children of Hawaii. A group of Polynesian children living on ancient natural foods was used for comparison. These Polynesian children showed 95.4 per cent *sound* teeth, whereas the Hawaiian group living on a diet of high cereal showed 98.2 *decayed* teeth. The chief difference between the two types of diet lay in the form in which the starchy carbohydrates were taken. The ancient diet included starch chiefly from tubers, such as the taro and the sweet potato, whereas the modern diet was composed primarily of starches from the cereals, rice and flour.

At the time this Hawaiian investigation was being made, Doctor Larsen of the Queen's Hospital noted a similarity between the dental observations made in Hawaii and the results of his own experiments in the feeding of puppies on cereals; namely, the deterioration of enamel known as odontoclasia. With his coworkers, Martha Jones and George P. Pritchard, he instituted a research campaign among 140 cases of newborn infants, and babies. The tooth structure was examined for decay as well as bony structure. Dental and bony tissues were microscoped, and roentgenograms were taken of unerupted teeth and bones and teeth. They found that there were two types of dental deterioration: one affecting the enamel, known as odontoclasia, and the other affecting the dentine and bony tissues of the body generally. The pathology of the changes indicated that odontoclasia is produced by any condition that tends toward an upset of the acid-base equilibrium in the direction of the acid side.

A summary of the conclusions reached in the Hawaiian experiments follows:

1. Heredity is not the important factor in dental decay.

2. Lack of hard foods does not cause decay.

3. Sufficient calcium alone does not correct the fault because children on cow's milk show decay in the same proportion as those on mother's milk.

4. Vitamin D does not appear to be a factor as the maximum amount of sun available and the addition of cod liver oil did not seem to prevent it.

5. The state of the saliva or its content of acid-forming bacilli does not seem to be the "prime mover," because the changes have been seen to begin before the eruption of the teeth and their contact with saliva.

6. Dental decay appeared to be related to the acid base balance of the tissue fluids. On the other hand, high alkalinity, especially when prolonged into adult life, promoted a strange bony absorption of the alveolus which resulted in loosening of the teeth.

Control of Periodontal Disease by Electrocoagulation

H. H. POWERS, D.D.S., Manistique, Michigan

THE OBJECT OF this article is to place in the hands of the dentist in general practice a technique with which he may face intelligently and conscientiously patients suffering from periodontal disturbances. This is a neglected phase of dentistry, because of past failures and too few enduring results. The inability to cure or control this disease (as general practitioners) is directly responsible for the premature loss of millions of teeth.

It is not my intention to enter into the causation of the disease. Patients with periodontitis present themselves by the dozen, and we in general practice have been more or less powerless to aid them materially. Too many contributory and ineradicable causes may produce the disease to guarantee or even state that a cure is possible. I do not claim a cure in electrocoagulation, nor does the patient treated expect it. No specific duration statement as to the prolonged retention of the teeth is made. Only indefinite prolongation and retention is offered. The average patient is delighted if he can retain his teeth and be relieved of wearing dentures for five, ten, or fifteen years longer. If through electrocoagulation dentists can accomplish such a result, a necessary service will definitely have been provided.

The technique used in electrocoagulation is largely that of Doctor G. Farrell Webb of Kansas City, Missouri.

The chief factors to be considered in the control of the disease are the dentist, the patient, and the technique. The average prophylaxis is far from thorough. In many instances it is impossible to accomplish a thorough prophylaxis for patients presenting deep pockets and heavy subgingival deposits, or in cases in which the gingiva is swollen, congested, and hemorrhage is extensive from deep scaling. Local inciting causes, such as overhanging margins in the interproximal spaces, irritation from ill-fitting gold crowns, and poorly constructed bridgework, are often not carefully checked or controlled. To determine and eliminate such contributory causes, a complete set of roentgenograms is necessary.

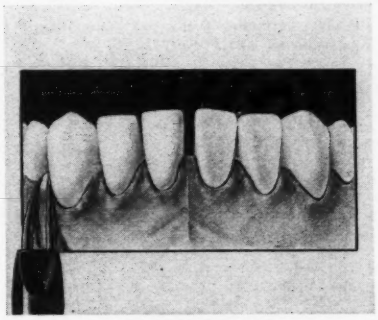


Fig. 1—Initial application.

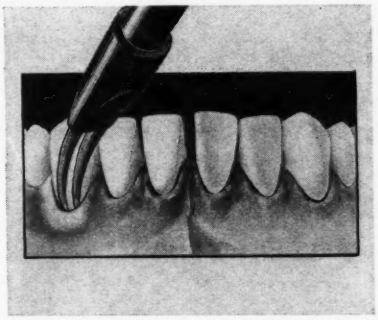


Fig. 2—The blanched area has been coagulated.

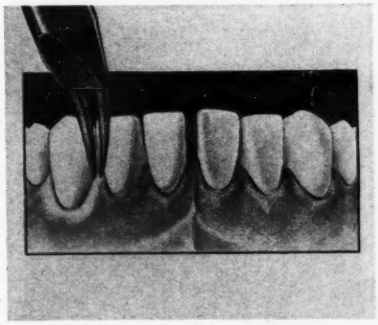


Fig. 3—Interproximal application. In the molar regions the electrode tips are straightened and the flexible stem of the electrode is curved to accommodate the application.

It is vitally necessary that the patient be made to understand his condition and agree to give unstinted cooperation. Visits for prophylaxis must be made regularly and consistently. Detailed toothbrush drills are important. Instruction in finger massage must also be explained and stressed. If there is any suggestion that the patient is suffering from a systemic disease, from infected tonsils, or is in a debilitated condition the dentist should insist on the advice and treatment of a physician. The results of electrocoagulation on patients suffering from chronic kidney disease or chronic stomach disorders have not been satisfactory when these systemic conditions were not relieved. In such cases the mouth is a perfect barometer.

Theory of Technique

The theory behind electrocoagulation is to eliminate all pus pockets, overhanging, edematous and diseased unattached gingival tissue, and to remove any diseased alveolar process adjacent to the pocket or tooth. In so doing a healthy field is created around these teeth which is easily accessible for the thorough use of the toothbrush. The result then depends on how successfully the contributory causes are eliminated and how well the patient cooperates. With the creation of a healthy field and the elimination of irritation, the teeth regain varying degrees of rigidity, depending on the amount of alveolar attachment left to support them. Electrocoagulation actually boils the water from the tissues. It does not burn as does the cautery. The result is a sloughing of the tissue within a

small radius of the electrode points. A bipolar electrode is used and the extent of coagulation had will be approximately 1 mm. beyond the point of insertion in the pocket.

Classification of Cases

Group One—Group one includes the initial cases involving the upper third of the upper half of the periodontal attachment. The prognosis is excellent.

Group Two—Group two includes all cases showing involvement of the upper two thirds of the periodontal attachment. The prognosis is good.

Group Three—Under group three are placed all cases showing a loss of one-half or more of the attachment. The prognosis in this group must be guarded; nevertheless, the degree of health obtained even in some of these advanced cases is sometimes astonishing.

Anesthesia

Topical anesthesia has not been found entirely satisfactory. Its use is employed only as an obtundent, followed by a superficial mucous injection of novocain-cobefrin into the gingiva just below the gum-line. The number of punctures made is of no importance as this tissue will be immediately coagulated.

Technical Procedure

First Visit—The roentgenograms are examined and points of necessary coagulation are recorded on the patient's filing card. A case history is taken. The type of occlusion, and sources of irritation and infection together with the necessary dental requirements are recorded. If deposits are heavy, I have had a quicker recovery through their removal before any coagulation is done. Select from four to eight teeth (the number depends on the depth of the pockets and the type of patient), and anesthetize.

1. Insert the points of the electrode to the bottom of the pocket on the distal of the first tooth to be coagulated. Then withdraw the points of the electrode about 1 mm. Press the foot switch and make the first coagulation. As soon as the gum turns white, release the switch. Coagulation will be extended beyond the electrode points to the bottom of the pocket.

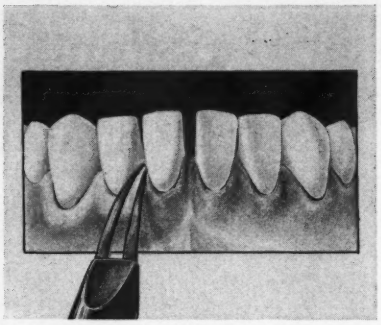


Fig. 4—Another view of interproximal coagulation.

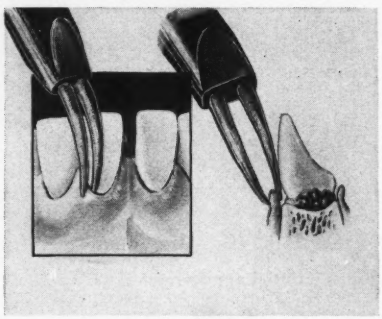


Fig. 5—How the electrode points straddle the tissue to be coagulated.

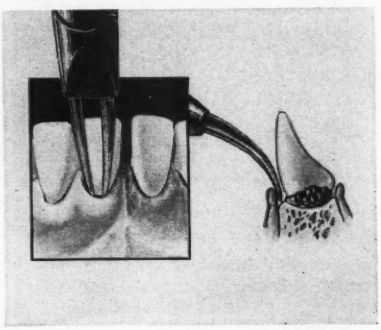


Fig. 6—Proper positions of the electrode when it is desired to coagulate "from the inside out."

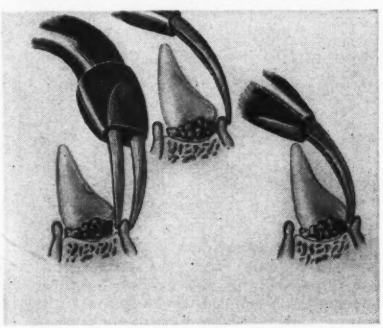


Fig. 7—Lingual positions of electrode.

2. Place the right point of the electrode in the pocket previously coagulated and the left point in the pocket on the mesial of the next tooth distally to the tooth coagulated. Feel the depth; withdraw the required distance, and coagulate.

3. Hold the electrode perpendicularly, with the points extending away (from the operator).

4. Place both points on the labial of the first tooth coagulated and probe to the bottom; withdraw sufficiently, and coagulate.

5. Make the mesial coagulation on this first tooth by placing both points on that surface; probe to the bottom, withdraw, and coagulate.

The distal, the interproximal space distally, the labial and mesial of one tooth have now been coagulated.

6. Repeat the coagulation steps until all the labial aspects and interdental spaces have been treated.

7. Coagulation of the lingual is similar except for slight variations in holding the electrode. The steps made should be similar and by so doing every surface of each tooth is coagulated.

The following mouthwash will be found effective in speeding the recovery of the tissues after coagulation and its use is continued for a month after the coagulations are made:

Wine ipecac	15 Gm.
Fowler's solution	40 Gm.
Glycerin	30 Gm.
Hydrogen dioxide	40 Gm.
Water	500 Gm.

Mix with equal parts of water and wash the mouth frequently. In an extreme case, the water is eliminated and all hydrogen dioxide is substituted.

The average patient will return with little complaint of pain. Occasionally, however, a neurasthenic patient will complain of pain and sleeplessness. An excellent procedure is to prescribe a sedative for such patients.

The first night after coagulation will be the only time in which it may be necessary to combat after-pain. The patient is then dismissed with the instruction to return the next day.

Second Visit—The gums will be white and starting to slough. The teeth will be slightly sore and no scaling will be possible or advisable. The mouth and especially the interdental spaces are sprayed with warm hydro-

gen dioxide and the coagulation area is swabbed with equal parts of tincture of aconite and tincture of iodine. The patient is dismissed for two days.

Third Visit—Repeat the procedure of the second visit. It is usually inadvisable to perform additional coagulation at this time as the teeth previously operated on are still tender on occlusion. The patient is again dismissed for two days.

Fourth Visit—This is the fifth day since treatment was begun. The sloughing should be completed; the gums somewhat red, and the tenderness of the teeth that were coagulated should be gone. These teeth may now be scaled.

The technique outlined in these first four visits is repeated until all necessary coagulation is accomplished.

Complications Following Electrocoagulation

The most frequent complication is under-coagulation. A certain amount of "spot coagulation" afterward will be necessary in many instances. As these teeth require all the healthy supporting tissue possible, it is much more desirable to under-coagulate than to overdo it. Under-coagulation will show in the form of bright red spots, usually in the interdental spaces. Inflamed areas that will not respond to treatment signify under-coagulation, overlooked subgingival deposit, or that occlusal relief is necessary. The sudden inception of a coryza, tonsillitis, or the presence of any systemic disease, such as a nephritis, will markedly retard recovery. Considerable thought and investigation will occasionally be necessary in order to discover why recovery is retarded.

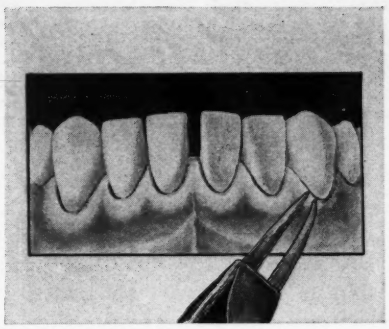


Fig. 8—General appearance of coagulated area.

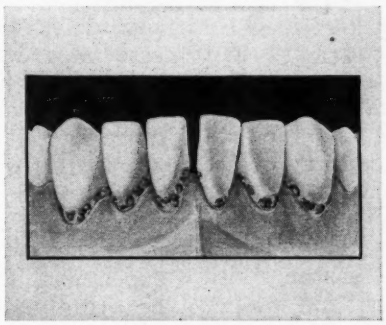


Fig. 9—Appearance after sloughing of coagulated tissue before calculus has been removed.

Final Visit—A final set of roentgenograms provides an excellent check on pocket elimination, diseased process, and the removal of inciting and contributory causes. The occlusion is checked and corrected as much as possible. The teeth are cleaned with a bristly brush and paste, and the interproximal spaces polished. The patient is dismissed for three months.

When the patient returns the rate of calculus deposit may be determined, and visits for prophylaxis arranged accordingly. The appearance of the case will serve as an index to the cooperation of the patient.

Conclusions

1. Electrocoagulation provides a definite control for periodontal disease which endures in proportion to the amount and conscientiousness of patient cooperation.

2. Electrocoagulation provides a medium for the care of patients that the average dentist in general practice has heretofore been unable materially to assist.

3. Indefinite prolongation will be had—not a cure.

4. The technique is simple and the operator quickly becomes proficient. Thoroughness is required rather than operative ability.

5. In addition to the use as outlined, the electrocoagulating unit will be found invaluable for the removal of third molar gum-flaps; removal of gum tissue grown into cervical cavities and the control of subsequent hemorrhage during cavity preparation; and the elimination of high muscle attachments in denture construction.

First National Bank Building.

The Editor's Page

MANY FACTORS OPERATE to induce the dental indifference to treating children: To operate on a squirming, squalling, uncooperative child is difficult. Moreover there is always the fear among dentists that they will not be adequately paid for the service. Discouragement arises also because of the difficulty of operative procedures for children. In no other field of dentistry do we find so many technical failures as we do in our work on the deciduous dentition. Technical hazards constantly present themselves in the form of restorations cracked or lost or the recurrence of decay around the margins. Such experiences may induce the dentist to suggest to parents that dentistry of the deciduous teeth is not satisfactory.

Caries in the deciduous molars usually begins in the proximal surfaces; the tooth is rapidly invaded; the bell crown shape of the tooth makes proper cavity preparation and proper restoration difficult. It is not easy to place properly contoured restorations in deciduous teeth. The pulp seems to be easily irritated which makes us fearful to secure adequate retention. The result is that on subsequent inspection many restorations either have cracked at the occlusal-proximal junction or have been lost. Finally, we are confronted with this paradox: Deciduous teeth that have been restored frequently have dead pulps and so-called gum boils. In the same mouth, teeth that have gone untreated sometimes do not produce symptoms.

We have exhorted parents to bring their children early to the dental office. Early recognition and care will usually enable the child to retain deciduous teeth for the normal physiologic period. We have stressed the danger of loss of deciduous teeth and danger from infection of deciduous teeth. It would appear that we should add to this educational effort a candid statement of fact: That unless the child is brought to us early, we can do him little good; that neglected caries in the deciduous teeth is almost an inoperable condition. In the adult, inlays and crowns, bridges and dentures can be made to replace missing teeth; but the average child can have none of these. We must depend on operative dentistry, and at the present time the quality of operative dentistry for children is extremely low. Perhaps we should have some material suitable exclusively for the deciduous teeth. Perhaps we should modify our principles of cavity preparation for the deciduous teeth.

In addition to the problems cited, there is always the behavioristic aspect of dentistry for children with which dentists are confronted. We are sure that the child should come to us before pain drives him; that his first experience should be as pleasant as possible, and not associated with pain. The dentist should be pointed out by the parent as a friend, and not as the purveyor of punishment. The dental office should be neither a place for coddling nor of terrorism. The dentist need not act in the big uncle rôle nor should he appear in the part of an avenger. The personal equation must be emphasized as much as technical expertness. The child may carry in his mouth a beautifully constructed inlay, but in the back of his mind he may carry a dental neurosis, often incited by the dentist himself, which will last long after the deciduous tooth has been shed. Some pediodontists suggest severe measures for the intractable child. The technique for the so-called towel method is described by one pediodontist as follows:

> The towel is cupped in the palm of the dentist's hand, placed tightly over the child's mouth and nose and his nostrils closed between the operator's thumb and index finger. In as calm a voice as the operator can assume, the child is told that as soon as he is willing to behave and to help, to raise his hand and the towel will be removed. Usually his hand is raised at once. As soon as the towel is removed, however, he starts shrieking and calling for his mother.
>
> The towel is replaced and the dentist states calmly that he is sorry that the child is still unwilling to help but when he is really ready to do so, to raise his hand again and he will be given another chance. One or two replacements of the towel will usually conquer the most negativistic child.

The author of this heroic treatment recognizes that this should not be employed for the nervous child. We have no objective method, however, of appraising the nervous child, and the method is sufficient to make a calm child nervous. I believe the effect of this towel treatment from a psychiatric standpoint is comparable to that of locking the child in a dark closet or washing his mouth with soap. For my part, I would sooner have a child lose a deciduous tooth than develop a neurosis.

Calcification in External Maxillary Artery*

BERNARD P. MORGENSTERN, M. D., D. D. S., New York

THE PATIENT, A MAN, aged 75, complained of pain in an edentulous area in the lower right molar region. When Doctor Peter Woycik of the interne staff of Bellevue Hospital brought this case to my attention, nothing abnormal was found on examination of this area, but a small roentgenogram (Fig. 1) revealed a calcified area immediately above the crest of the ridge. Nothing in the gum tissue could account for this condition, and when one of us (Doctor L. Allen of New York University College of Dentistry) palpated the adjacent cheek, a cord-like density was felt in the corresponding area. Another roentgenogram taken only through the cheek showed this calcified mass to be located in the cheek alone (Fig. 2).

A large roentgenogram (Fig. 3) showed in addition that this calcified area was of greater extent than the

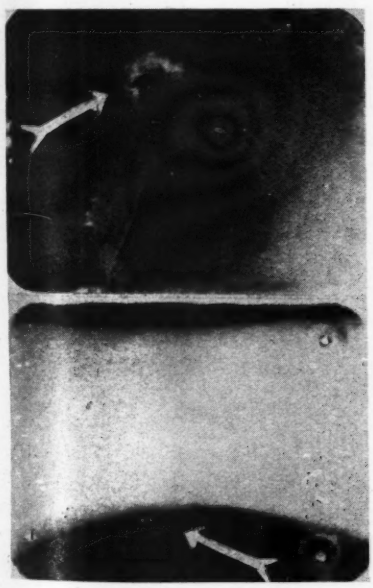


Fig. 2—Calcified mass shown to be located in cheek alone.

Fig. 3 — Calcified condition pursuing course of external maxillary artery.

*From the service of Doctor Leo Winter, Department of Dentistry, Bellevue Hospital.

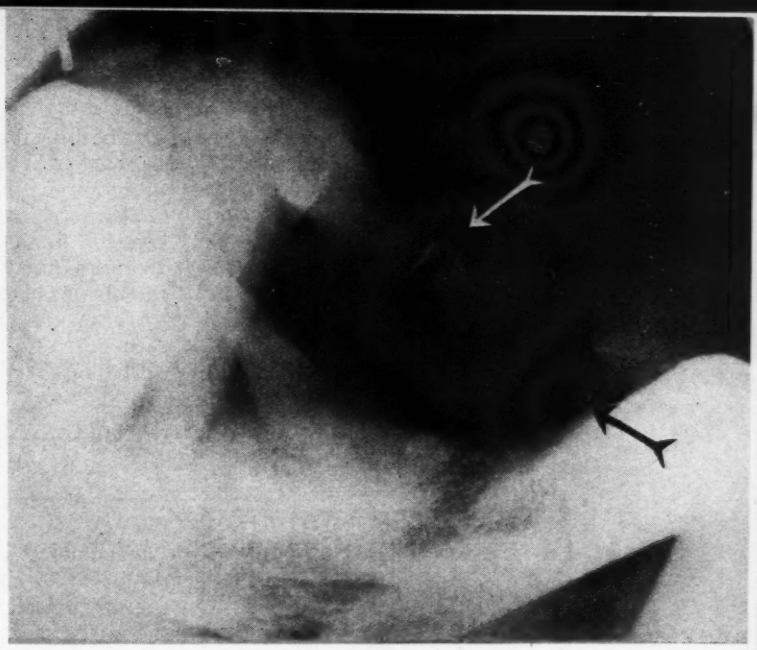


Fig. 1—Calcified area above crest of ridge.

Fig. 4—Roentgenogram of arm showing calcification along course of radial artery

small roentgenogram would lead one to believe, and that it pursued a tortuous course, such as an artery in the face (the external maxillary artery, for example) would take. On further palpation, the calcification could be traced downward to the course that the external maxillary artery takes. To verify this observation a roentgenogram of the arm was taken (Fig. 4). The same type of calcification can be observed in the course of the radial artery.

This type of arteriosclerosis is common in the arteries of the extremities, but, so far as we can determine, has not previously been observed in the arterial supply of the face.

This case is reported because of its unusual nature and in the hope that it may throw some light on the etiology of obscure pains about the face. It is well known that reduction in the blood supply of the extremities owing to arteriosclerosis causes pain. It may well be that a similar process is at times operative about the alveoli in elderly persons.

240 *East Seventy-Ninth Street.*

TO THE *Editor*

Prevention of Dry Socket

Of the numerous articles that have been written on the subject of the dry socket, few have dealt with the most important factor, namely, prophylaxis.

It is generally agreed that the causes of dry socket are trauma to the osseous tissues of the jaw and the invasion of bacteria from the oral cavity which contains numerous types of organisms, many of which are highly pathogenic.

The repair of the osseous tissues of the jaw involves the local deposition of fibrin in the plastic exudate which forms when the bone is traumatized. This covers the injured surface with a delicate film and protects it until surface continuity has been restored. The fibrin acts also as a cement substance, holding the tissues together. The fibroblasts which are liberated in the plastic exudate are essential to the progression of orderly repair of the injured bone.

The local ingress of white blood cells does a great deal to prevent infection at a point where the mechanism for wound healing is automatically established. The leukocytes may not be sufficient in number to withstand bacterial multiplication, or the pathogenicity of the organisms present may be sufficiently great to overcome the defense mechanism. It would be highly important, therefore, to discover a means of stimulating the local defense and repair mechanism. Such a means has been found in the application of an amniotic fluid concentrate.[1]

Method of Application

After the extraction, all sharp processes and loose particles of bone are removed, and the cavity or socket is swabbed with tincture of merthiolate[2]; the area is isolated with cotton rolls, swabbed with sterile gauze or cotton, and the amniotic fluid concentrate is flowed into the socket by means of a dropper. The solution should be allowed to remain about five minutes before coming in contact with the fluids of the mouth. The flaps are then sutured together and the patient is instructed to use a warm salt water mouthwash ten hours after the extraction.

In 1,013 extractions we have encountered two cases of dry socket and those healed in a satisfactory manner within the course of two days.

Conclusion

Amniotic fluid concentrate offers a valuable agent in the prophylaxis of dry socket in that it stimulates the normal processes of localized tissue repair.

—K. L. Bell, D.D.S., *Fond du Lac, Wis.*

[1] A purified fraction of that part of the whole bovine amniotic fluid concentrate, known as amfetin, a highly sterile, nontoxic agent for the stimulation of immunity and healing in surgery, primarily intended for the peritoneal cavity. It is reported to exert an excitor effect on the defense reaction of serious surfaces. The Amfetin used was supplied in part through the courtesy of Eli Lilly and Co.

[2] Sodium salt of ethyl mercuri thiosalicylic acid in bacteriostatic concentration. An orthorhombic crystalline powder containing 49 per cent mercury in organic combination. It is a germicide, fungicide, and antiseptic.

A Laboratory Technique for Denture Construction

W. S. VANDEN BOS, D.D.S., Orange City, Iowa

SUCCESS IN PRESSING thermoplastics depends a great deal on the method by which the material is handled during the pressing stage. The correct temperature and the correct amount of time used for pressing are two important factors. The complete pressing period, from the time the press is placed in the hot oil or glycerin until the time the flask is completely closed, should be from twelve to eighteen minutes. This brings about a maximum amount of condensation. If a longer period is taken or too high a temperature used, this cannot be accomplished.

Denture Materials

Care should also be taken in choosing denture material. A few of the faults to guard against are softness of material and porosity (causing the denture to stain easily); a tendency to change shape or warp; and color change. Only a few denture materials have survived the test of time.

Stone Models

The first requisite in making a successful denture is that all models be made of stone plaster. This is essential because of the enormous pressure exerted during the pressing stage. Models of ordinary plaster of Paris are apt to crush.

Waxing and Carving

In waxing cases there will be cracked margins, especially over the necks of the teeth, if the carving is done too thin. When thinness is required in the finished denture, it can be accomplished later with sandpaper and burs.

Flasking

The new improved hecolite flasks are used. All flasks should fit snugly when the upper half is placed on the lower. If there is any play anteroposteriorly, the results are apt to show in the occlusion of the finished denture. Instead of closing in centric occlusion, the anteroposterior relationship of the upper and the lower denture may deviate the same amount as the "play" in the slots of the flask.

Preparation of Lower Flask—A few hints on the preparation of the lower flask will facilitate deflasking:

1. Drill a five-eighths inch hole in the center of the lower half of the flask.
2. Cover this hole with a steel disc the size of a half dollar. (A freeze plug which can be obtained at a garage is suitable.)
3. Apply cold cream to the entire inside surface of the flask except the lid, and on all exposed surfaces of the stone model.
4. Flask the waxed case in the usual manner with stone plaster (Fig. 1).
5. The model should be tipped so that the anterior part of the ridge is parallel to the line of stress during pressing. Generally the anterior ridge slants forward; therefore, the posterior part of the model should be tipped down in the flask.
6. To eliminate cutting of regular

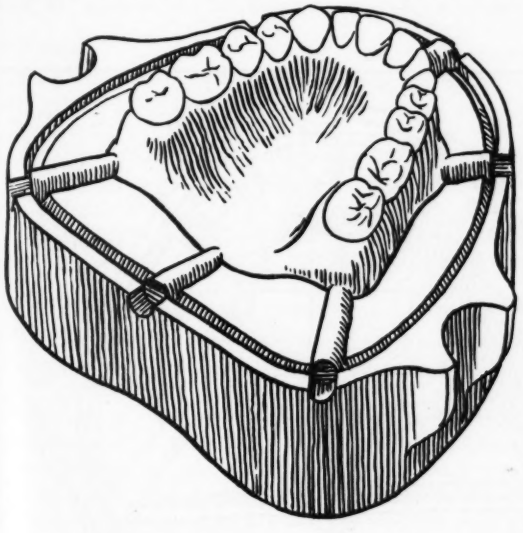


Fig. 1—Waxed case flasked with stone plaster, and wax strips placed from each gateway to the waxed case to eliminate cutting of regular sluiceways.

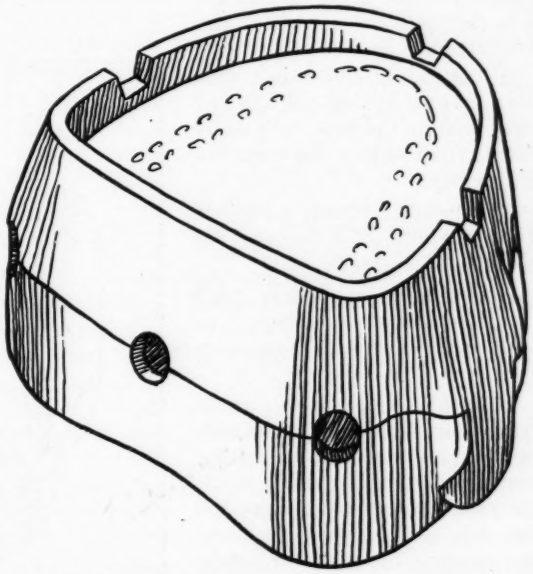


Fig. 2—Upper flask poured in stone plaster. Points of cusps and incisal edges are seen.

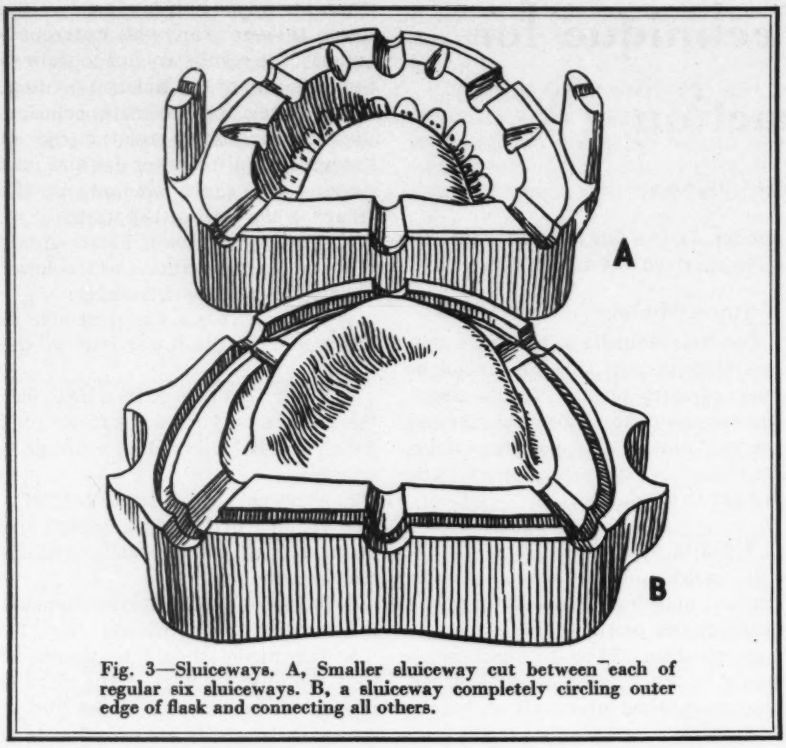


Fig. 3—Sluiceways. A, Smaller sluiceway cut between each of regular six sluiceways. B, a sluiceway completely circling outer edge of flask and connecting all others.

sluiceways in the stone plaster later, wax strips the size of the gateways can be placed at this time, from each gateway to the waxed case (Fig. 1).

Preparation of Upper Flask—The preparation of the upper half of the flask to facilitate the use of the deflasking clamp is as follows:

1. Cut, with a file, V-shaped slots on the ends of the extending arms of the upper half of the flask. This keeps the clamp from slipping off while exerting pressure.

2. Pour the stone plaster until it is level with the occlusal surface and the incisal edge of the teeth.

3. With a finger or spatula, wipe the stone plaster until all points of the cusps and the incisal edges show (Fig. 2).

4. Allow this to set until a separating medium can be applied, usually in about ten minutes. As a separating medium ordinary cold cream is ideal. (Cold cream is also satisfactory for plaster impressions when the cold cream is worked into the corners with a pair of tweezers and some cotton. The case can then be poured immediately, and perfect separation is assured.)

5. After the separating medium has been applied, pour the remainder of the upper half of the flask in stone.

Separating

1. When the case has been allowed to stand for about half an hour, it is ready for separation. Water has proved more satisfactory for this than oil, because it leaves the oil free from débris and wax colors. Two good tablespoonsful of Sal-Soda are added to the water before the flask is immersed. This will break up the wax. The Sal-Soda aids in cleaning the case and prevents the water from clogging the pipes. An ordinary potato masher may be used as a carrier for the flask when placing it in the hot water.

2. When separated, clean the upper and lower halves of the flask, first with the hot water, then with motor ether applied with cotton.

3. Examine each tooth carefully to see whether it is loose. Loose teeth must be cemented into place. This is important because teeth are often misplaced, and I have seen cases in which a tooth was completely hidden and replaced by the denture material. The "relief" must also be cemented into place.

4. At this time the rugae are easily carved in the vault, any curved instrument being used which has a rounded cutting edge and cuts when pulled.

Sluiceways

1. It is important to cut the correct number of sluiceways. In between

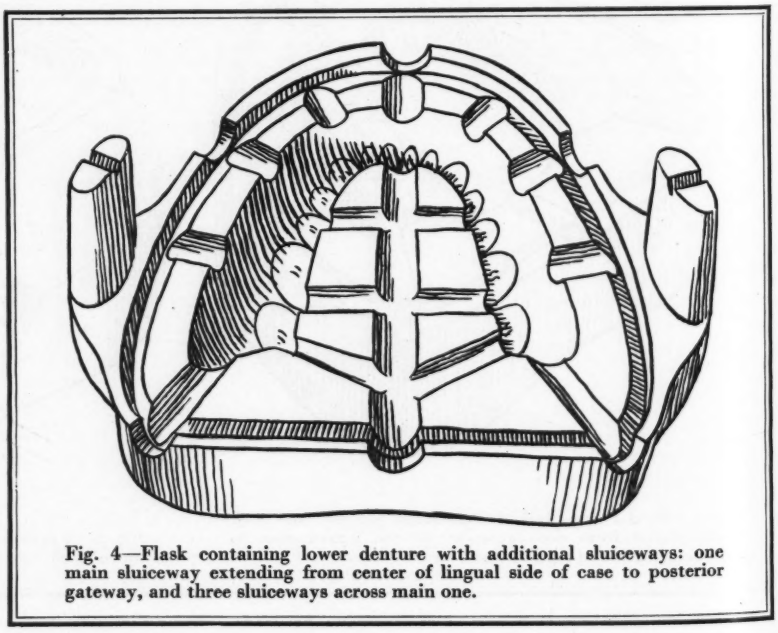


Fig. 4—Flask containing lower denture with additional sluiceways: one main sluiceway extending from center of lingual side of case to posterior gateway, and three sluiceways across main one.

each of the regular six sluiceways, it is well to cut a smaller one in the plaster (Fig. 3, A).

2. Completely circling the outer edge of the flask, cut a sluiceway connecting all the others (Fig. 3, B).

3. Remove all sharp edges of plaster so as to make rounded corners, and thus prevent any cracking of the plaster and pieces from being incorporated into the denture.

4. The flask containing the lower denture requires a few more sluiceways: one main sluiceway extending from the center of the lingual side of the plate to the posterior gateway, and three sluiceways across the main one (Fig. 4).

Placing in Press

Having prepared the case, it is ready to be placed in the press. Wet and mold cellophane over the stone model; place the blank between the upper and the lower halves of the flask and put this in the press with that half of the flask containing the teeth at the bottom. This is done to prevent the teeth that might become loose from falling.

I have used car lubricating oils for pressing; recently, glycerin was substituted and this seems more satisfactory because there are no odorous fumes from the oil.

The Press

The press developed and used in our office consists of a press unit and a retaining member, the purpose of which is to ace as a clamp for the press while exerting pressure. This clamp is a help in the final stage of pressing when enormous pressure is used. The glycerin should be raised to about 300° F. before the press and flask are immersed. The cold flask and press will immediately lower the temperature to about 275° to 280° where it should be kept during the pressing stage. The nuts can be turned down with the T-wrench at first. The press is then removed to the clamp and the nuts turned with the pressure wrench. One must be careful not to use too much pressure. The press is again immersed in the glycerin for a few minutes; again removed in order to clamp and tighten the nuts. This is repeated, the pressure being gradually increased, until the flask is closed.

Deflasking

Cutting the stone plaster from around the denture to remove it from the flask is no longer necessary. The deflasker used in this technique eliminates that tedious work.

1. After the case is pressed and cooled sufficiently, the lid is removed and the deflasking plate put in its place.

2. With the deflasking clamp, the upper half of the flask can be removed by pressure.

3. The lower half is removed by means of the deflasking clamp exerting pressure against the steel disc. The stone plaster usually separates readily from the stone model.

The next step may seem a bit radical, but I have used this method of removing the stone model from the denture for some time and have never had a misfortune with it.

4. Place the case, teeth down, in the palm of the hand, and with a small hammer, tap the stone over the entire surface. A constant tapping will disintegrate the stone plaster except where there is a deep undercut which will have to be cut and pried out. This tapping will also dislodge all plaster from around the teeth (the portion lying in the palm of the hand). Thus this whole procedure of deflasking requires only a few minutes' time, and it eliminates the old process of using a knife.

Duplicating

I believe all dentures should be remade every five or seven years, depending on the fit and condition. If this suggestion is followed, it will give the patient a service that assures comfort and improved appearance. A simple and accurate duplicating technique follows:

1. Take a new impression in the old denture with any suitable quicksetting impression plaster. Impressions should be taken with both dentures in position, and with the patient exerting the final pressure and muscle-trim.

2. With the upper, it is advisable to drill, with a number 8 cherry bur, from ten to fifteen holes through the vault and flanges. This serves two purposes: First, the holes act as gates for excess plaster, thus giving the denture a chance to reseat in normal occlusion; second, the holes act as a binder for the plaster to adhere to the vault.

3. Let the excess plaster work up for the muscle-trim while setting.

4. With the lower, if it refuses to reseat properly, or causes distortion of tissue because of a stiff mix of plaster, gateways can be cut with a number 8 bur in the necessary direction.

5. Trim the plaster, and wax the labial and buccal surfaces to the desired thickness.

6. Pour the impressions with stone plaster, and as soon as these are hard, they can be flasked in the usual way, as described previously.

7. Let the flasked cases stand for about thirty minutes; then place them in the hot oil or glycerin, from 300° to 310° F. The cases should remain in the oil until the heat has completely penetrated the plaster, usually about ten or fifteen minutes; then, carefully open the flask.

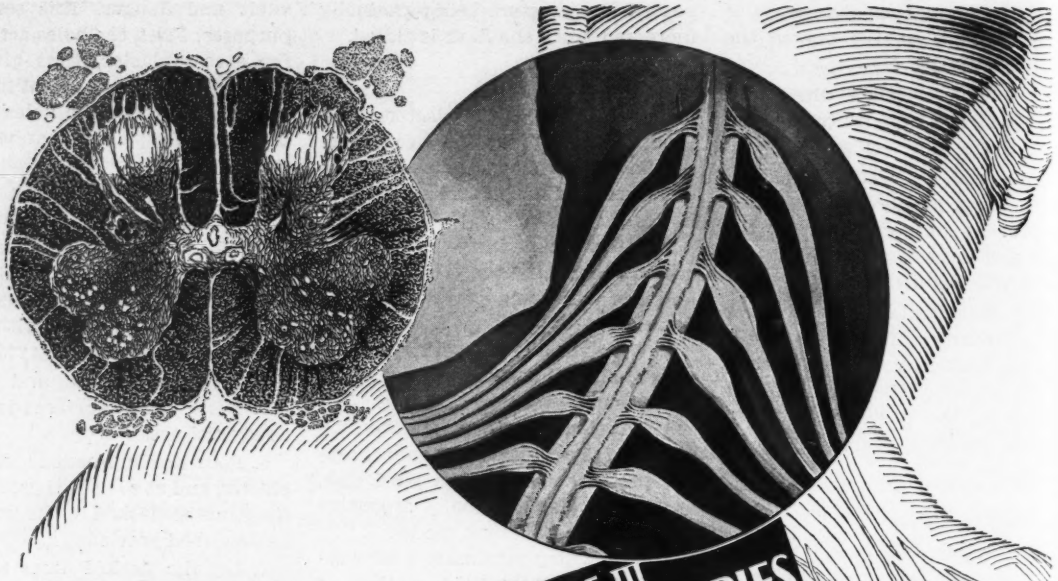
8. Replace that part of the flask containing the denture material in the hot oil and leave it there until the material has softened enough to be taken out with the aid of pliers without loosening any of the teeth.

9. If any of the teeth do become loose, they must be cemented into place before the case is pressed.

10. Clean the case; cut sluiceways; place the blank, and press.

11. After the case has been pressed and cooled, use the deflasking clamp to deflask it.

If a vulcanite denture is to be duplicated to a thermoplastic, it is necessary to remove all teeth carefully from the denture by heating them over a flame. Remove all dark stains. When all the rubber with a tendency to retain the teeth has been removed with a bur (rubber around the pins and openings of the diatoric teeth), wax the teeth in their respective places, taking care that each tooth is in the same position it was before it was removed. Follow the regular duplicating process, except that water may be used for separating instead of oil.



CASE III

ACETANILID SERIES

A series of case types where the dominant symptom is pain of nerve origin.

TABES DORSALIS

CHIEF COMPLAINT: Sharp, stabbing pain, more common in legs or arms, but may dart to other areas.

HISTORY: Lightning pains, sometimes resembling rheumatic pains, not increased by motion; numbness of feet, tingling, etc.

PHYSICAL: Pin-prick test shows delay of perception; analgesic zone around upper thorax; knee-jerk absent, etc.

SYMPTOMS: Irregular pains in legs diminish on pressure; muscle power and general nutrition good; bladder emptied with difficulty; sexual desire and power decreased; Romberg sign present.

DIAGNOSIS: Early ataxic stage of tabes dorsalis.

TREATMENT: (Symptomatic) Acetanilid, 5 grains repeated.

Williams holds that acetanilid will alleviate the pains of locomotor ataxy when nothing else will. (Minor Maladies).

Bromo-Seltzer provides 3 to 3.5 grains of Acetanilid, plus its synergists—Caffeine and Bromides—in each teaspoonful dose. Caffeine gently invigorates the mental processes. Bromides promote relaxation of overwrought nerves. Citrates improve digestion, tend to replenish alkaline reserve and give to Bromo-Seltzer its effervescent palatability.

Bromo-Seltzer relieves pain effectively and economically.
Requests for sample and literature receive prompt consideration.

EMERSON DRUG COMPANY, Baltimore, Md.

(Please use coupon on page 362)

Comments of Participating Dentists in Patient Study*

(*Continued*)

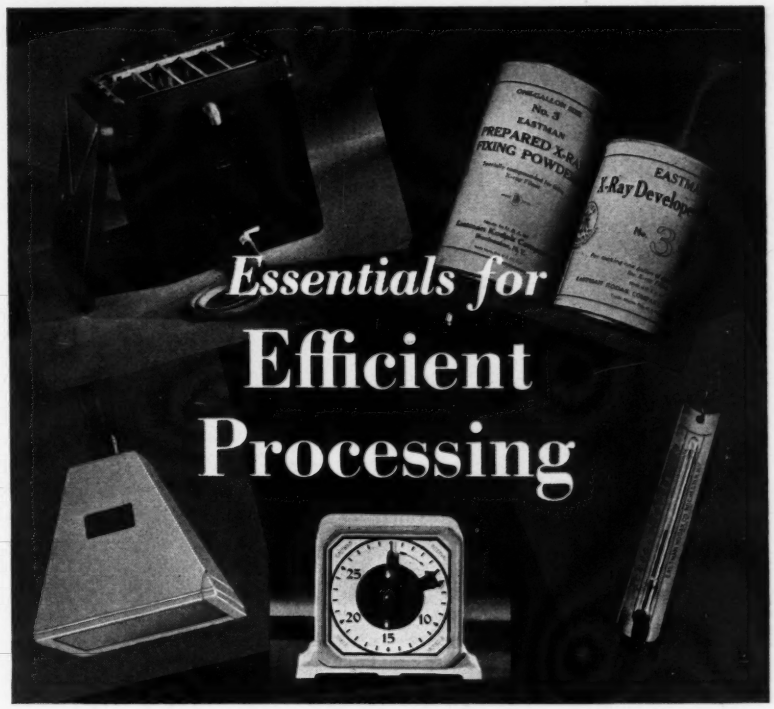
8. Standing out is the ignorance of the average patient in regard to all dentistry. This is not the patient's fault. He wants to know and will remember. Patients answered the questions with what they had been told in the past; therefore it is not ignorance that is the patients' fault, but misguided and misleading information from the dentist. In the name of enlightenment, it is high time we started taking the hard way to explain instead of the path of least resistance. Every one of us knows he is guilty.

There are numbers within the profession who do not know enough about dentistry to be sincere in their practice. I know them and you know them, and how can they enlighten patients when they are so sorely in need of enlightenment themselves? The answer is they are in the profession solely for the money; all they can get, and how they get by year after year is a mystery to me. Back of most of the answers to the questions can be imagined what sad explanations the patients have been given by dentists in the past. I mean the ones who should not be practicing dentistry.

It can be detected sufficiently often throughout the answers that the average patient is anxious for good dentistry and is willing to pay for it, provided he can be assured of getting his money's worth. Too often, in fact often enough to become the general rule, he is not getting it. So what does he do? He concludes that all dentistry is a racket, and that he can scarcely trust any dentist. And this evident distrust is something hard to overcome.

I leave it to the others, who partook of this opportunity, to comment on the scientific side of this article, as I do not feel capable. I could only speak of those things which stand out like a mutilated thumb in a barrel of brine to me.—WILBER E. MECOM, D.D.S., *Wisner, Louisiana.*

*These are a continuation from last month of the comments of the cooperating dentists on the study What Twelve Hundred Patients Know About Dentistry, the serial publication of which was begun in January of this year and concluded in the May issue.



HAVE you made a thorough checkup in your x-ray processing room lately? This is a prerequisite to efficiency and economy in radiodontia during the summer season . . . for hot, humid weather brings added problems in processing.

Your tank should be adequate in size and designed so that solution temperature can be regulated. Your timer and thermometer must be accurate, for unless the time and temperature factors are precise, you cannot expect satisfactory results. Safelight lamps must be free from light leaks. If your equipment doesn't fulfil these requirements, it should be replaced with the Eastman accessories shown above.

Dependable processing powders are necessary as a final safeguard. Eastman Prepared Processing Powders are especially suited to meet the rigid demands of summer. . . . The action of the Developer is stable; the Fixer has maximum hardening properties.

Helpful Booklet on Request

Use the Eastman booklet, "X-rays in Dentistry," as a guide in checking your processing facilities. Your regular dental dealer can readily supply the needed Eastman accessories and chemicals.

If you haven't a copy of "X-rays in Dentistry," mail coupon at right and one will be forwarded promptly.

EASTMAN KODAK COMPANY, *Medical Division*
345 State Street, Rochester, N. Y.

Please send me a free copy of "X-rays in Dentistry."

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DENTISTS who are familiar with the Kolynos formula and action recognize its *cleansing, refreshing* and *germicidal* properties.

CLEANSING Kolynos is a concentrated dental cream which mixes quickly with the saliva to form an active, penetrating foam that loosens and dissolves mucin plaques. The teeth are polished without danger of abrasion and the entire oral cavity is thoroughly cleansed.

REFRESHING Users of Kolynos enjoy and comment upon the clean refreshed feeling it leaves in the mouth. The mouth feels clean because it is clean.

GERMICIDAL Kolynos not only neutralizes the acids formed by mouth bacteria but reduces the oral flora 80 to 92 percent with each brushing.

THE KOLYNOS COMPANY
NEW HAVEN, CONN.

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9. Anything which has been the source of so much work should not be hastily examined. My reaction to the whole survey is the predominance of good sense in the majority of the answers; for instance, it is refreshing to see the proper value placed on dentifrices. Some of these advertising "experts" apparently have been shouting out the window.

I still hold no place for the idea of "educational publicity." It is all the bunk. The dentist's responsibility, his efforts at passing forth the proper ideas about teeth, is the prime source of correct information, and about the only source to which the patient pays much attention. Too often, we might as well be "shouting out the window" with the advertising copy men, in so far as the majority follow through on the ideas suggested.

Orthodontic tragedies will no doubt always be with us, although such dental cripples should have the same attention as crippled children receive now. These "human rights" should supersede ethics and fees. Perhaps the whole question of dental and orthodontic care can be correctly handled through prevention largely rather than treatment *after* the harm is done. Prevention can best be accomplished by a system of rigid inspection periodically done at least every three months until the youngsters finish high school.

If these preventive measures were taken within a single decade, many of the dental problems would be simplified. Patients would not only have sounder, straighter teeth, but they would lose that "fear" which haunts all of us when we think of the usual dental attention.

When dental caries reaches the same status as smallpox, (the end-results today are far more detrimental) and receives the same prophylactic treatment, then we will begin to do some good. Until then our problems will continue to be about the same. The crooked mouths of mouth-breathers and the sagging jaws from mutilated occlusion will continue to haunt us—all because we lack the vision to tackle this problem in its incipiency.

We have today paramount issues in conservation. And rightly so. That link in the economic chain affects each one of us. No one expected complete conservation before the Ohio River played havoc. It is a safe bet

that something will be done about it now. It is unfortunate that this same lack of conservation in the teeth of the nation cannot have an Ohio River to come raging through to wake us up. Until then if the profession would get down to the task of prophylactic care it will do its most worthwhile service. Artificial teeth are 100 per cent better than nothing; but however skillfully we construct them, they are a poor substitute for the natural organ.—GRAVES PEAY, D.D.S., *Little Rock, Arkansas.*

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10. Back in 1931, we had occasion to discuss an advertising campaign conducted by a Scranton newspaper. This campaign consisted of a series of display advertisements supposed to stimulate public interest in dental health. At that time, I was of the opinion that the campaign was ineffective. At the same time I expressed the opinion that the only place for the public to gain its best education in dentistry, as well as acquire an interest in the subject that would bring the best results to both the patients and the dental profession, was from the dentists themselves. This would first necessitate educating the dentists in proper lay education. I still retain the same notions.

The editorial observation in the closing paragraph of the second installment of the patient study strengthens my views in this regard. "Of the 1200 patients only nine showed a reaction to this question, 'What is your understanding about pyorrhea?' which might have been conditioned by advertising influences. This seems highly important. In view of the extensive campaigns and thousands of dollars that have been spent by dentifrice manufacturers on this subject, the inference may once again be made that general advertising or so-called dental health education is not so potent as is commonly supposed."

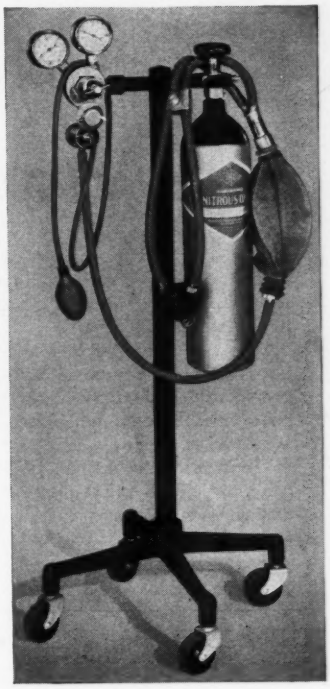
It is too bad there is no way of knowing definitely how many of the patients that had answered the questionnaire were new ones. My guess would be that the greater number had been regular patients and frequent visitors to the dental office. The majority of answers to virtually every question suggests the type of education that could only have been attained in the dental office from the dentist himself. Even to the point where the dentist in his attempt to

THE OHIO ANALGESOR

AN ACKNOWLEDGED PRACTICE BUILDER

It removes the fear of pain from the patient's mind . . . tends to make each visit a pleasant experience . . . encourages patients to call more often and provides them with a new and interesting topic of conversation with their friends.

Technically, the Ohio Analgesor simplifies operative procedure, permitting work to proceed faster. It is especially valuable in the preparation of cavities, abutments for crowns, bridge-work and the like.



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Model 188 (illustrated) $70.00
Model 186 (with foot ring) . 60.00

Less cylinders and Gas • F. O. B. Branches

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Pioneers and Specialists in Anesthetics
BRANCHES IN ALL PRINCIPAL CITIES

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Name _____
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(*Or please use coupon on page* 362)

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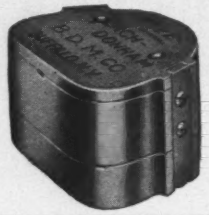
POST EXTRACTION TREATMENT

reduces the danger of infection. Its cooling and soothing properties reduce discomfort at once. A balanced saline-alkaline prophylactic and bacteriostatic, it promotes normal granulation and rapid healing. Helpful to promote comfort as a general mouth wash and at the chair. Recommended by dentists for over 20 years.

THE MU-COL COMPANY, Dept. DD-77, Buffalo, N. Y.
Please send free testing sample, sufficient to make 6 qts. MU-COL solution. I enclose my card or letterhead.

Name ..... D.D.S.
Address .....



Uppers, Long Guides

SET OF 4

For Lowers, Short Guides
For Lowers, Long Guides
For Uppers, Short Guides
For Uppers, Long Guides

Lowers, Long Guides

YOUR FLASKS MUST FIT

We once heard an expert dental technician say, "An artificial denture is only as good as the flask in which it was invested."

This, of course, is not literally true, but it does emphasize the fact that poorly or loosely fitted flasks can cause many of the difficulties encountered in denture work.

We have always kept that fact in mind, and FIT has always been of first importance in producing Buffalo Dental Flasks.

"File and Hammer" assembling long since gave way to modern machine grinding and milling, which, coupled with proper design, produces flasks to which you can entrust your best skill in impression taking and articulation without fear of distortion in the finished product.

Our four No. 22-C Tench-Donham bronze flasks are the finest we have ever produced. May we send you an illustrated circular fully describing them?

Use the coupon on page 362.

BUFFALO DENTAL MFG. CO., Buffalo, N. Y.

If you are not a regular subscriber to THE DENTAL DIGEST, you will find a convenient order blank in this issue.

THE dancing stone that wobbles on its mandrel has no place in your office. Chatter and jar and heat and pain can be avoided. For there is one stone that runs true, never wobbles, always cuts evenly, never glazes and that is why so many dentists are saying

No dentist ever regrets using

SILTEX DENTSTONES

The securely mounted, true running, mounted points

enlighten the patient regarding the advantage of one restorative material or denture base over another might have unconsciously put the idea in the patient's head that the restoration or appliance would last for a specific number of years.

The replies to the question, "What do you expect a tooth paste or tooth powder to do for you?" would apparently tend to illustrate further that the public pays its greatest heed to the dentist, and not to what is displayed in print.

In the August, 1932, issue of THE DENTAL DIGEST, Doctor Harold J. Noyes of Chicago in an article headed The Case of Ethical Publicity Versus Display Advertising made this statement: "In 1931, fifteen leading toothpaste and mouthwash manufacturers spent $7,394,277 on magazine advertising. This had its effect on the public, but I question whether the public has through this advertising any more adequate conception of the value and proper use of these adjuncts to oral health than it did at the end of 1930." At that time, Doctor Noyes merely questioned this in his own mind. I believe, I am safe in assuming that he hadn't a great deal of definite data to go by, except, of course, his personal observations. This study by THE DENTAL DIGEST, made four years later, certainly seems to bear out his remarks.

The question, "Do you think of an extraction of a tooth in the same way as you do an operation?" was the one to which the answers were most significant in pointing out to me that "as the dentist views the point so will his patients." I agree with the statement made in the editorial interpretation of the analysis of the answers to this question: "We dentists still consider tooth removal as a casual procedure."

It was a pleasure to be able to take part in the making of this survey and I appreciate the opportunity given me to comment on its results. Frankly, in my judgment, I believe the effect of this comprehensive nation-wide survey entitled, "WHAT TWELVE HUNDRED PATIENTS KNOW ABOUT DENTISTRY," should teach the dental profession the following: First, that the public is not altogether ignorant about dentistry; second, there are yet many more important things to straighten out in the minds of the public; third, all sections of the country require the same type as well as the same amount

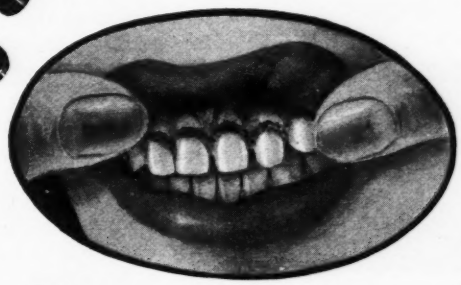
MALLOPHENE

IN STREPTOCOCCIC STOMATITIS

. . . averts ARTHRITIS

A not-infrequent cause of arthritis is *Streptococcus viridans* infection of gingival origin. Early recognition and prompt use of Mallophene in the oral lesion effectively *averts* this stubborn complication.

Mallophene is available as a Soluble Disc, 0.1 gm. (1½ grs.)—a convenient form for the preparation of aqueous solutions of any desired strength up to and including 4%. Also as a powder which may be used in making up solutions, paste or ointment according to the instructions in the literature.



Upon receipt of coupon we shall be pleased to send you promptly extensive and interesting literature on Mallophene.

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PROTECTING THE POTENCY OF YOUR PRESCRIPTIONS SINCE 1867

DD-7

MALLINCKRODT CHEMICAL WORKS
ST. LOUIS, MO. or 72 GOLD ST., NEW YORK, N. Y.
(address your nearest office)

Please send latest clinical literature:

.....D. D. S.

St. and No.....

City.....State.....

(*Or please use coupon on page* 363)

THE teeth nature gives most of us are models of esthetic and mechanical quality. Once lost, their functions are difficult to replace.

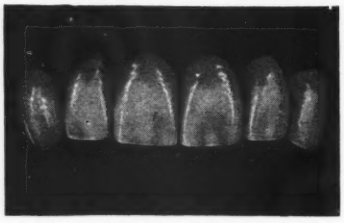
Porcelain—the ideal case

No restoration conforms more closely to natural standards than the porcelain case. None so delights the patient with its rare combination of adequate strength and striking, lifelike appearance.

That Lochhead porcelain restorations compete most favorably with nature's own handiwork is conceded by the many dentists who use them. Jacket crowns, inlays, anterior and posterior torque-resisting bridges—all are hardly distinguishable from the natural even at close range.

Demand proves superiority

Artistically and functionally, Lochhead porcelain restorations rank second only to natural tooth structure. The great demand for them is ample proof of their superiority.



TORQUE-RESISTING BRIDGE —Can be made in spans of two units and upward. Strongly reinforced—no metal visible on any surface.

★ ★ ★

Lochhead Laboratories, Inc.

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939 Enquirer Building

NEW YORK, N. Y.
115 West 45th St.

LOS ANGELES, CALIF.
512 Hillstreet Bldg.

BOSTON, MASS.
120 Boylston St.

CHICAGO, ILL.
East Washington St.

MONTREAL, CAN.
1414 Drummond St.

of education; and finally, the most effective manner of imparting dental education is through the dental profession, preferably, by personal instruction.—SAUL LEVY, D.D.S., *Scranton, Pennsylvania.*

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11. The replies to your patient survey are interesting. Since receiving the proof sheets of the completed article, I have spent considerable time attempting to analyze the replies in such a way as to be able to draw some general conclusions, but I have been mainly unsuccessful.

My opinions may be summed up as follows:

The questions, without exception, are pertinent. It appears that if a couple of them had been more explicitly phrased, they would have been less subject to misinterpretation; namely the second part of question 11 and the first of question 12. No doubt many of the answers are likewise subject to misinterpretation and do not express the writer's true ideas.

In general, the replies indicate that the writers' opinions have been gained through personal experience or through information given by dentists. It would seem that the influence of current advertising copy is negligible.

To a surprising extent, the replies indicate a true and reliable conception on the part of the public of dental problems. Although many show a lack of specific knowledge, they do demonstrate that the public's basic ideas of dentistry are in line with current dental opinion.

I should like to see replies from 1200 "average" dentists, picked at random from *Oral Hygiene's* subscription list, to questions 3, 5, 7, and 8. I dare say the replies would be startlingly similar to those received from the patients.

From replies to question 4, I believe more frequent local anesthesia will be in order for operative procedures than is now used.

Let me suggest that THE DIGEST run a series of authoritative articles on the etiology and classification of periodontitis. Most of us know lots of treatment but precious little cause.—C. P. CLEVELAND, D.D.S., *Jacksonville, Florida.*

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12. I went over your study of WHAT TWELVE HUNDRED PATIENTS KNOW ABOUT DENTISTRY and found it very interesting. It is worth while for the dentist to have a cross section of just

LOWERS
Where Trouble is So Often Found

•

The difficulties so commonly met in the construction of lowers do not worry the dentist who uses Dr. Kelly's Impression Paste as a regular part of his technic!

In denture construction, in rebasing, in all operations requiring a true registration of the soft mouth tissues, "Kelly's Paste" is a priceless help. It not only simplifies the job, but aids in quickly establishing the patient's confidence in the final outcome, and contributes materially to the correct *fit* and *functioning* of the completed denture.

If you haven't tried the new "Kelly's Paste" you cannot know what it will do for you. Dealers everywhere have it; and our unqualified guarantee goes with every package. Kelly-Burroughs Laboratory, Inc., 143 N. Wabash Ave., Chicago, Ill.

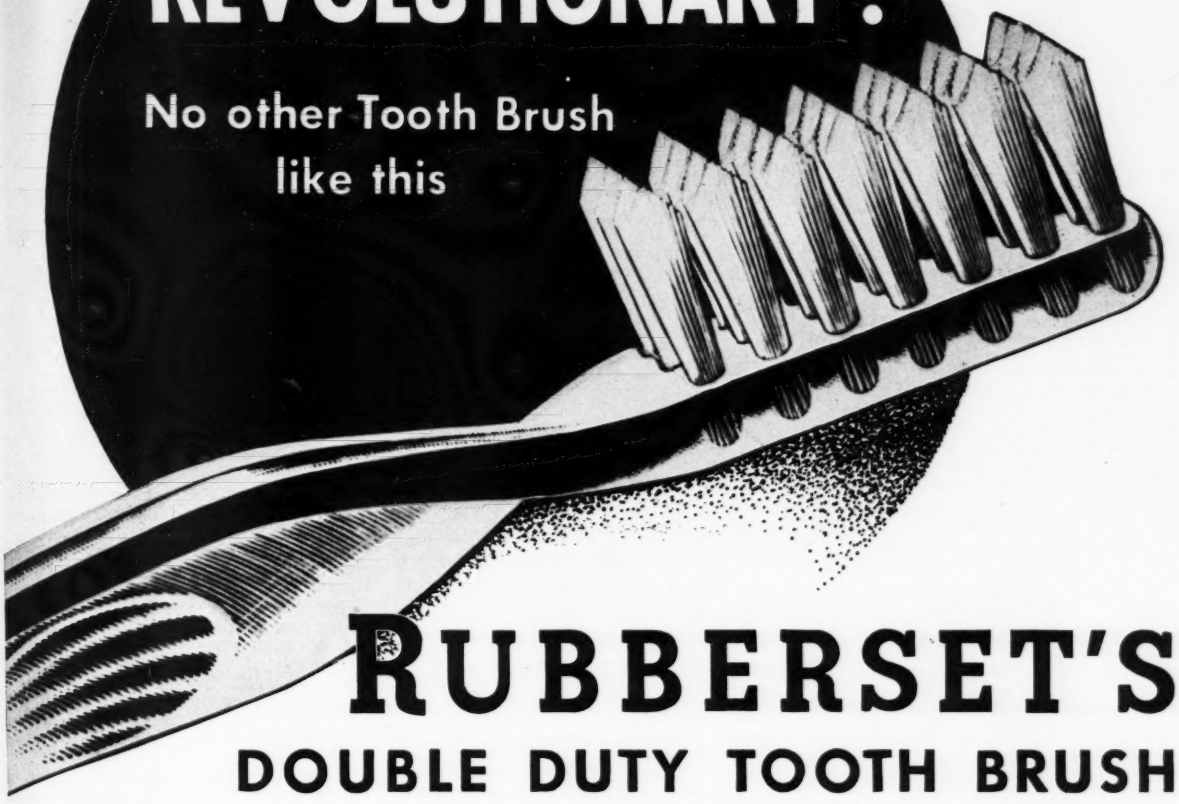
Two forms . . . power-and-liquid or ready-mixed in tubes, $2.50 (only a few cents an impression)

•

KELLY'S PASTE

REVOLUTIONARY !

No other Tooth Brush
like this



RUBBERSET'S

DOUBLE DUTY TOOTH BRUSH

Brushes the teeth—Massages the gums

1000 Dentists Helped Suggest These
5 Scientific Features

1. Small brush head with bristle knots widely separated for greater cleansing accessibility.
2. Unique handle twist makes almost automatic correct brush placement for proper brushing and massage; it provides better mechanical leverage.
3. Long, fine bristles, good resilience for safe brushing and massage.
4. Even contour of bristle knots for efficient gum massage.
5. Convenient non-slip thumb-rest for balanced brush grip.

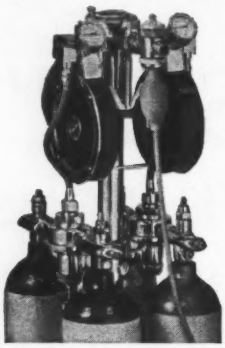
RUBBERSET COMPANY
630 FIFTH AVENUE DEPT. 2 NEW YORK, N. Y.

THE DEPARTING PATIENT

What does he think of dentistry —*and you?*

As the patient leaves your operating room, is he thinking of dentistry in terms of its health value? Or is he endeavoring to regain his composure after having undergone a most unpleasant experience? Is he congratulating himself for having selected a dentist who has eliminated pain from routine dental operations? Or is he more than ever convinced that dental treatment is something which should be avoided as long as possible?

When you operate with a McKesson Euthesor, you know what his reaction will be. With the Euthesor you will have eliminated pain and discomfiture from cavity preparation, scaling and other routine operations. Your patient will be calm and confident. You will be relieved of the frequent interruptions caused by patient resistance.



The Euthesor is designed and built to provide every possible factor of safety and simplicity. It is the most efficient machine of its kind ever designed.

Controls are designed so that the flow of nitrous oxide and oxygen can be regulated by the patient, set by the operator, or controlled by the assistant.

The technic is simple and safe. Once set, the controls are positive in action, assuring a flow of gas unvarying in volume and pressure.

You are doubly insured when you invest in a Euthesor. For a nominal additional expense you can at any time convert the Euthesor into a machine to provide either analgesia or complete anesthesia.

Return the coupon for complete information on the McKesson Euthesor. Or ask your dental dealer to demonstrate a Euthesor for you.

McKesson Appliance Co.
Toledo, Ohio

Please send me literature on McKesson equipment.

Dr. .....
Address .....
City .....State.....

You will find another coupon on page 363.

what patients know and think, so that he can explain certain points and avoid those which are well known. The study shows that there is still plenty of room for education of the public on dental matters.

Congratulations on your work and best wishes.—SAMUEL CHARLES MILLER, D.D.S., *New York.*

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13. As the new DENTAL DIGEST has greatly advanced visual education in the dental world, so your questionnaire has revealed to the dental profession what the layman really thinks of dental ills and our treatment of them.

Gratifying is the belief of many patients in care of the "first" teeth; diet related to dentistry, and dental health to general health. The general lack of knowledge is perhaps due to these causes: (1) In the layman's complex life, little interest is manifested in the healing arts except in time of trouble when, (2) for financial reasons, the treatment is largely emergency work, and (3) in this, the only opportunity we have to bring the importance of prevention and early care to the family, we are so occupied with the emergency that we do not take the trouble to go into an illustrated lecture, as the majority of cases require.

The patient-mental-dental survey suggests *system* in dental education, and a more satisfactory set-up for *regular* dental care which would be fair to the families of both dentist and patient.—KENT K. CROSS, D.D.S., *Denver.*

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14. Your survey provoked many interesting and some surprisingly intelligent replies. The remarks were of particular interest to me and if properly interpreted, it would seem that the public is ready to accept the health story of dentistry.

That being the case, why not publish a magazine for the express purpose of educating the public? It was clearly brought out in the answers that not all dentists have the health story or know how to tell it.

The patient that suggested the education of children through schools, clinics, and so on was not advised of some effort being made along that line. At present, Colorado is launching an educational program for children up to the sixth grade. This is being handled through our State Dental Educational Committee, with the aid of the Maternal and Child

HU-FRIEDY

Leads Again - - - - -

THE ORAL SUN LIGHT

A Headlight with the brilliancy of the sun conveyed to the orifice of the mouth. Economy in maintenance and durability in construction are added features of this very efficient illuminating equipment.

The problem of heat generated in any illuminating appliance has been solved by the construction of the reflectors which are of the cylinder type, and still maintain ventilation. A ground optical lens covers the opening of the cylinders. This will condense the focus, which concentrates the actual candle-power of the bulb. The focus is adjustable, in the same manner as that of a telescope.

The headband of the equipment is furnished with either soft leather or stiff fibre, both cushion padded, to render comfortable carriage when in use.

The complete equipment consists of ten feet of rubber covered wire cord, a stage connector close to the headband, to permit quick connection or disconnection if desired, a transformer for A.C., or a rheostat for D.C. The wall plug is vulcanized to the rubber covered cord, which prevents loosening from constant pulling. This is an important safety feature.

Furnished on ten days' trial—price—$17.50, with one extra bulb.

Will be on display at National Meeting in Atlantic City.

HU-FRIEDY MFG. CO.

3118 N. Rockwell St., Chicago, Ill.

Please send me one Oral Sun Lamp on 10 days' trial.

Name .....
Address .....
City ..... State .....
Dealer .....
Current .....A.C. .....D.C. .....
Headband .....leather .....fibre .....

(Or please use coupon on page 363)

THE IMPORTANCE OF CALCIUM IN *orthodontic procedure* SHOULD NOT BE OVERLOOKED

It is generally accepted that the application of mechanical force to accomplish tooth movement and bone expansion should be accompanied by an ample supply of calcium and phosphorus in the body to provide for the increased bone formation. Since children's appetites are often capricious, their diet may be deficient in calcium. The addition of a dietary supplement, such as Dicalcium Phosphate Compound with Viosterol Squibb, may therefore be advisable when orthodontic work is being done.

Dicalcium Phosphate Compound with Viosterol Squibb provides calcium and phosphorus in proper ratio and sufficient Vitamin D to insure absorption and utilization of these minerals. It is supplied in both tablet and capsule form.

Each tablet supplies the equivalent of 2.6 gr. calcium, 1.6 gr. phosphorus and 660 units of Vitamin D (U. S. P. XI). They are supplied in boxes of 51 tablets. Two capsules are equivalent to one tablet. They are available in bottles of 100. Children enjoy taking the pleasant wintergreen-flavored tablets. Capsules are useful as a change from tablets.

Samples and literature are available to dentists on request. Send your professional card or letterhead to Dental Division, 745 Fifth Avenue.

E·R·SQUIBB & SONS, NEW YORK
MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.

Dicalcium Phosphate Compound *with* Viosterol Squibb TABLETS • CAPSULES

(*Please use coupon on page* 363)

Modern dental practice is a far cry from practices of thirty years ago. And, your practitioner of '01 would marvel at the efficiency and safety of modern local anesthesia.

For today, with Cobefrin the truly modern vasoconstrictor in anesthetic solutions, either Cook or R. B. Waite, and the new safe and simple means of alkalinizing these solutions, dentistry has reached a new era in the means available for pain prevention.

Novocain-Cobefrin in Cook or Waite cartridges and ampules offers you advantages not possessed by any other anesthetic. The "Alkalinizing Cartridge System" offers you a safe and simple means of further emphasizing these advantages, enabling you to alkalinize a cartridge of Novocain-Cobefrin safely and quickly at time of injection.

If you are not already using Novocain-Cobefrin try a box today. If you are at present realizing its advantages why not try a Special Alkalinizing Package.

COOK LABORATORIES INC. • **The ANTIDOLOR MFG. CO., INC.**
170 VARICK STREET — NEW YORK, N. Y. Laboratories: Rensselaer and Springville, N. Y.

Carpule REG. U.S. PAT. OFF. & CANADA

R. B. Waite REG. U.S. PAT. OFF. & CANADA

Alkalinizing Cartridge System with

NOVOCAIN *with* **COBEFRIN**

Novocain Reg. U. S. Pat. Off. Winthrop Chemical Company, Inc. Brand of Procaine HCl. Cobefrin, Reg. U. S. Pat. Off. Winthrop Chemical Company, Inc. Brand of Nordefrin.
Alkalinizing Cartridge System, U. S. and Can. Patents Applied For.

Welfare Division of the State Board of Health. This assistance is made possible under the Social Security Act and is no doubt available in all states.

I hope that your endeavor will serve as an impetus for a successful program.—EARL H. ZIMMER, D.D.S., *Colorado Springs, Colorado.*

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15. The survey made among 1200 patients from all sections of the country makes me feel both like a humanitarian, devoted to my chosen profession, and a quack or a charlatan. By nearly all, the dentist is regarded as a necessary part of their daily life—evil or otherwise. It may enable us to stress certain points more and others less, and to educate our patients to a better understanding of exactly what we are trying to do and why we are doing it.

A great deal may be said about certain points emphasized in the article, and much may be gained by the readers in doing a little intelligent thinking about the various remarks. The comments range from extremely humorous ones to disparaging ones; but an excellent cross section of patient knowledge and feelings is obtained.

I am grateful for having had an opportunity to serve in a small way in this survey, and I sincerely hope that the readers will, as I have, derive some lesson from it.—SCOTT MORRISON, D.D.S., *San Francisco.*

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16. The editorial comment already made in connection with results of the patient survey is so constructive that I can add little to what has already been said.

Our patients, as shown in the survey, are reasonably well informed, and it seems to me that just a little more effort on the part of the profession in explanation of our attempts to promote dental health would result in an even greater enlightenment. Since I have studied the survey, I have been attempting to put this into practice by making more careful explanations of procedure, and by trying to make these comments as clear as possible so as to prevent misinterpretation on the part of the patient. If another "survey" is ever made, I intend my patients to contribute answers that will lift them well out of the "passing" grades toward a more complete understanding of what dentistry is and what it hopes to accomplish.—IRVING R. HARDY, D.M.D., *New York.*

Write for a free copy of "Dentistry for Children," an informative booklet you will find interesting and valuable. Use coupon on page 363

THE HIGHEST TYPE OF DENTAL SERVICE

VACATION time and a row of children sitting in the waiting room. Too often looked upon as a more or less unpleasant "accommodation service," the care of children's teeth really is the most important work done by the dental scientist. Not only the child's future but the future practice of the dentist largely depends upon these first visits and first impressions.

You will need copper cement for these cases. Ames Oxyphosphate of Copper—first developed over 35 years ago—has never been equaled in its positive germicidal action and ease and speed of application.

Other Ames products which provide copper in the cementation are Ames CC Liquid, which contains 5% of dissolved copper phosphate and which can be used with any of the Ames regular crown and bridge powders, and Ames Copper Amalgam, the first and still the most dependable copper amalgam. Insist upon Ames Cements. Accept no substitute. The W. V-B. Ames Company, Fremont, Ohio.

AMES DENTAL CEMENTS

The coupons on pages 362-363 are for your convenience in writing to advertisers

As POLISHED as a BADGE OF HONOR

BS POLISHERS make teeth look their very best—as polished as a hero's medal, as bright as the stars above. With a BS POLISHER in your handpiece and your preferred prophylaxis agent you can **rapidly, gently, thoroughly** cleanse every surface of your patient's teeth—even under the free margins of the gum.

Made only of the finest pliable rubber, BS POLISHERS have no exposed metal to harm teeth or tissue. Their flair skirt protects your handpiece by keeping out all grit. Furnished in boxes of 12 for 60c or in new "visible" ½-gross containers at $3.00 thru your dealer.

Free OFFER

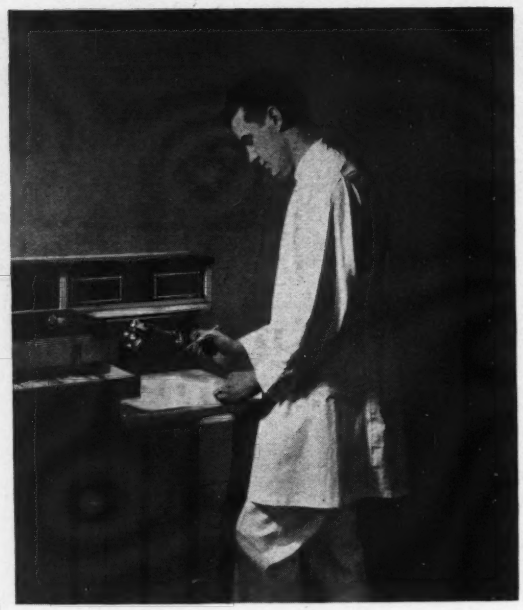
It costs you nothing to TRY BS POLISHERS. We will gladly send FREE SAMPLES upon request. Ask about Baby BS Polishers—the new smaller BS Polisher for small adult and childrens' teeth.

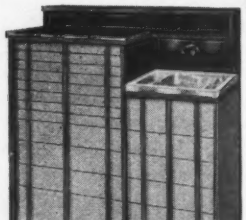
Cross Section View of BS Polisher

YOUNG DENTAL MFG. CO. 4955 Suburban R.W. ST LOUIS MO

(*Use coupon on page* 363)

MORE CONVENIENCE FEATURES For You





American Cabinet No. 144, with built-in wash basin.

You will find them in the American Cabinet No. 144. They include new automatic disappearing bottle rack; soiled towel compartment; 48 specially designed and interchangeable instrument trays; electric illumination; electric outlets for headlamps, sterilizer, and other apparatus; built-in wash basin with foot-operated faucet for hot and cold water.

Added to the other well-known features which American Cabinets pioneered, they give you a combination of convenience, efficiency, and sanitation, in a cabinet of modern design, which meets every demand. Be sure to see the No. 144 before you choose any dental cabinet.

Send in the coupon below for full information about the No. 144 cabinet. We will send you also the complete American Modern Dental Cabinet catalog.

American DENTAL CABINETS

AMERICAN CABINET CO.
Two Rivers, Wis. Dept. A-4-37
Please send me full information on the No. 144 cabinet and your dental catalog manual.
Dr. .....
Address .....
City ..... State .....

This modern catalog-manual is yours for the asking. Just paste coupon to a penny post-card.

(*Or please use coupon on page* 363)

17. Little additional comment need be made. Any further discussion it seems to me should stress: (1) basis of the knowledge shown by the patient; (2) the significance of the information gained, and (3) the practical application of that information.

It is apparent that since three principal sources of patients' oral knowledge are (1) personal experience; (2) various types of proprietary advertising; and (3) professional advice or suggestion, too often such knowledge is incomplete and faulty.

It was gratifying to see that professional opinion carried superior weight. On the other hand, it was disturbing to see the cynicism and confusion engendered through advertising by mercantile establishments.

There were three outstanding impressions of significance to me. The prime determining factor in the stimulation of dental care is economic. Second, the patients are ready for some constructive preventive program; and third, too little professional time for advice is accorded them.

As to the practical application of the information gained, my suggestion would be more thought given to the proper handling of the patient; some constructive plan of economic value, and the dissemination by some means of accurate, up-to-the-minute, and impartial oral knowledge to the general public from a definitely known *professional* source.—WINFIELD S. FISHER, D.D.S., *Elmhurst, Illinois.*

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18. First and foremost I believe that this survey shows that we have stopped being "just dentists." We are now "the Doctor" and as such the patients are placing confidence in our opinions and are more than willing to act in accordance with our suggestions.

Second, the general public is far better informed than we as dentists have been giving them credit. Our educational efforts through the schools have been fruitful. People are now ready and willing to listen to their dentists if they will take the time to outline what they believe should be done. I firmly believe that an extra fifteen to thirty minutes spent with the patient in talking over his condition and what should be done to place his mouth in a healthy serviceable condition is what is most needed now. The patient is more than prepared to understand that which we

have to give him than we realized.

Third, I was surprised to find the lack of advertising plugs and slogans. We have always been led to think that if we repeat something often enough and loud enough, any idea can be implanted in the minds of the masses. The "power of the press" seems to have been "shorn of its locks."

Fourth, it would seem to me that the people have returned the challenge to us. It is not a case of what the patient wants done. It is the case of the patient being ready and willing to listen intelligently to that which we have to offer. Their standard of dental education is much higher than we realized and it is now up to us to "deliver the goods."—RAYMOND E. WORSLEY, D.D.S., *Dixon, Illinois.*

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19. In response to your request for an opinion of your survey carried on in cooperation with the thirty-seven dentists, of which I am one, I wish to congratulate both you and your staff on a fine piece of work. Having spent considerable time reading and studying it, I find that it is very enlightening and that it gives the profession a basis on which to plan an educational program that can be both informative and corrective. It is my hope that organized dentistry will follow up, using this survey or a similar one as a guidance in the information that they wish to disseminate.—F. J. HURLSTONE, D.D.S., *Chicago.*

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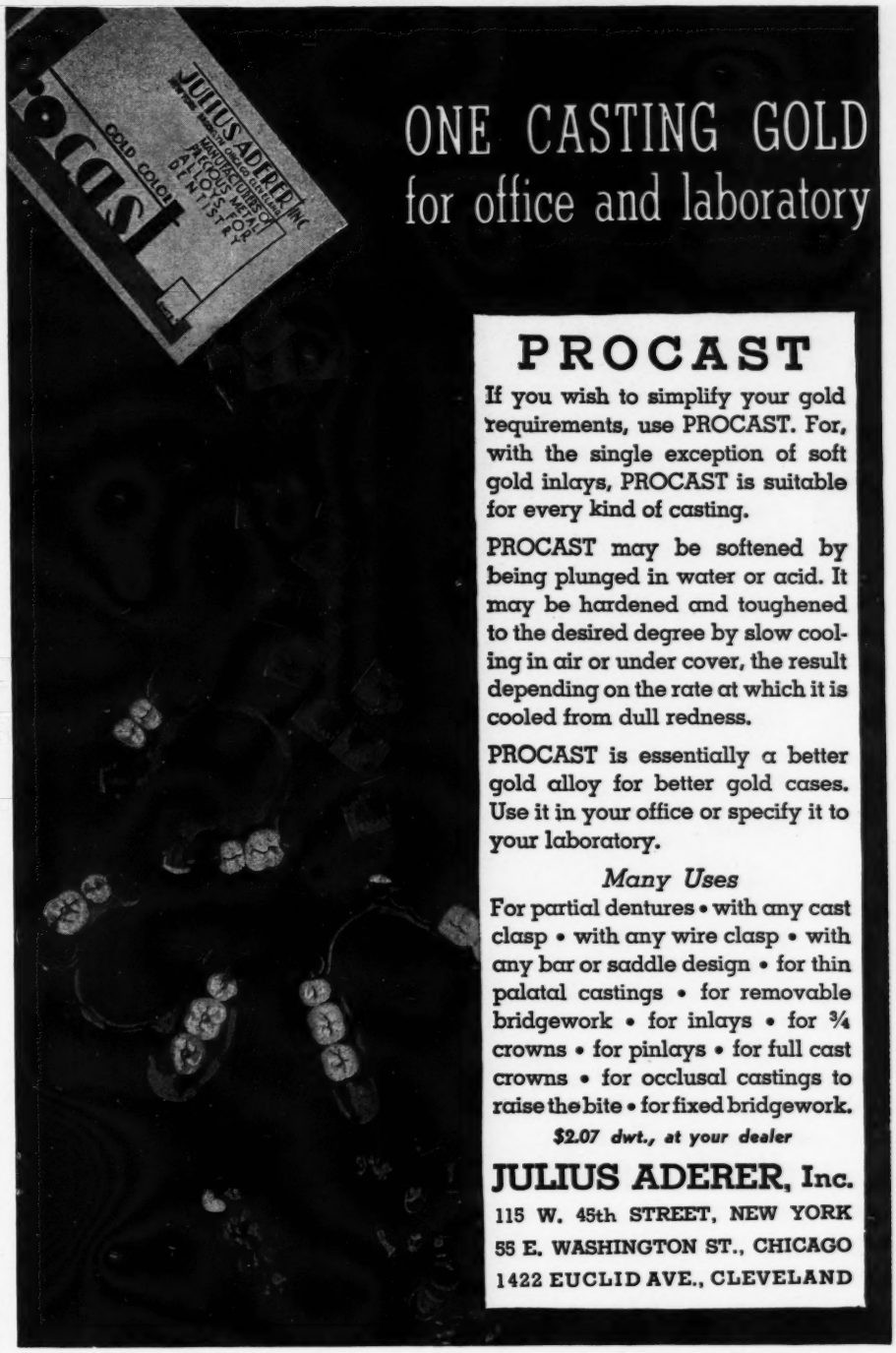
20. The answers given questions in the "Patient Survey" indicate conclusively that our patients are interested in the "Story of Dentistry."

When we consider that their visits to the dental office are confined to short periods, at varying intervals, it seems to me, from the standpoint of education, the answers speak well for both patient and dentist. That they have faith in their dentist is well illustrated in the answers given to the question dealing with the value of commercial tooth and mouth preparations. It is significant that irrespective of the claims made over the radio and in magazine and newspaper advertising these preparations are given just about their proper appraisal by a large percentage.

The answers to the question relative to the life of dental work indicates that considerable more frankness on the part of the dentist would be in order.



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The time spent in educating our patients along dental lines has borne fruit and more time devoted to this instruction will bear still more fruit. The patient is eager for this knowledge and will profit by it as also will the dentist and dentistry.—H. E. SNYDER, D.D.S., *Columbus, Nebraska.*

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21. It would seem that dentistry is to a large extent what the dentist has made it. Most of the answers came from people, who, to a degree at least, believe in dentistry.

The willingness of the client to be taught by the dentist is the most striking factor determined by the survey. The client's faith seems to be largely in the dentist's opinion, and his reasoning is not greatly influenced by commercial advertising.

Dentistry is primarily a humane service, and in all the answers the patient's willingness to be served at the dentist's discretion should be a factor in influencing the profession not to cause a loss of faith by their inability or indolence or lack of interest in the problem of the patient. An intelligent patient-education program will probably advance the status of dentistry more than any other factor.—W. P. ROCK, D.D.S., *Sterling, Illinois.*

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